CENTERS FOR DISEASE CONTROL

Vol. 38 / No. SS-3

MMWR

MORBIDITY AND MORTALITY WEEKLY REPORT

CDC Surveillance Summaries

December 1989

National Infant Mortality Surveillance (NIMS) 1980

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
Centers for Disease Control
Center for Chronic Disease Prevention
and Health Promotion
Division of Reproductive Health
Atlanta, Georgia 30333

The *MMWR* series of publications is published by the Epidemiology Program Office, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Atlanta, Georgia 30333.

SUGGESTED CITATION
Centers for Disease Control. National Infant Mortality Surveillance (NIMS), 1980. *MMWR* 1989;38(No. SS-3): [inclusive page numbers].

Centers for Disease Control ..... Walter R. Dowdle, Ph.D.
Acting Director

This report was prepared for publication by:

Center for Chronic Disease Prevention and
Health Promotion ..... Jeffrey P. Koplan, M.D., M.P.H.
Director

James S. Marks, M.D., M.P.H.
Deputy Director for Public Health Practice

Division of Reproductive Health ..... Carol J.R. Hogue, Ph.D., M.P.H.
Director

Pregnancy Epidemiology Branch ..... Hani K. Atrash, M.D., M.P.H.
Chief

James W. Buehler, M.D.
former *Deputy Chief**

Research and Statistics Branch ..... Jack C. Smith, M.S.
Chief

Phyllis A. Wingo, M.S.
Assistant Chief

Lilo T. Strauss, M.A.
Mathematical Statistician

The production of this report as an *MMWR* serial publication was coordinated in:

Epidemiology Program Office ..... Stephen B. Thacker, M.D., M.Sc.
Director

Richard A. Goodman, M.D., M.P.H.
Editor, MMWR *Series*

Editorial Services ..... R. Elliott Churchill, M.A.
Chief

Ann C. Usey
Writer-Editor

Ruth C. Greenberg
Editorial Assistant

*Currently with Center for Infectious Diseases, AIDS Program.

Copies can be purchased from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402-9235. Telephone (202) 783-3238.

Preface

This report presents data from the National Infant Mortality Surveillance (NIMS) project. The NIMS project was a collaborative effort between the Public Health Service and states to address the issue of infant mortality. Factors that affected the risk of infant mortality for single-born infants included birthweight, race, sex, gestation, birth order, maternal age and education, and prenatal care. The most important predictor for infant survival was birthweight, with improved survival for both blacks and whites associated with increased birthweights. Overall, black infants had twice the mortality risk of white infants. The higher risk for blacks was related to higher prevalence of low birthweight and to higher mortality risks in both the neonatal and postneonatal periods. In general, the black-white differential exists regardless of other infant and maternal characteristics.

Findings from NIMS have been published in a special section of *Public Health Reports* (March-April 1987) and elsewhere and have been presented at several national meetings.

Contents

Foreword v

Overview of the National Infant Mortality Surveillance (NIMS) Project
Introduction 1
History and Rationale 2
Design and Methods 3
Results 5
Discussion 8
References 17

Appendix. NIMS TABLES
Index for NIMS Tables 21
Guide to Table-Numbering Scheme 22
Notes for Tables 22
NIMS Tables
Set A: Infant Mortality: Number of Deaths and Risks, by Infant's and Mother's Characteristics, Singleton Infants 25
Set B: Infant Mortality: Number of Deaths and Risks, by Infant's and Mother's Characteristics, Multiple Birth Infants 45

Foreword

After two decades of consistent, gratifying improvements in levels of infant mortality in the United States, progress has slowed substantially during the 1980s. In fact, progress has lagged behind that of other developed countries; among the countries of the developed world, the United States now ranks 19th in infant survival. Even more disturbing is that essentially no progress has been made in reducing the twofold risk of infant mortality among blacks as compared with whites.

The nation is mounting new efforts to regain the momentum toward achieving our maternal and infant health objectives. To ensure the maximum use of limited resources, we need to assess current programs, evaluate new ones, and determine unmet needs. So that there will be a solid basis for making and justifying our decisions, this assessment requires good information that links infant health outcomes with the use of the programs.

Before the National Infant Mortality Surveillance (NIMS) project, the most recent national linkage of birth and infant death records had been done in 1960 by the National Center for Health Statistics (NCHS). Since that year, however, there had been no national benchmark to evaluate information on infant survival within specific birthweight categories and related to other key maternal and infant factors. The linkage of vital records offers a number of substantial opportunities other than providing infant mortality data. For example, such linkage provides the base upon which a state can overlay the characteristics of participation in a program such as Medicaid; Women, Infants and Children (WIC); prenatal outreach and others to evaluate its coverage and impact. Since this archival effort to produce national data for 1980, NCHS has begun annual linkage of birth and infant death records, beginning with the birth cohort of 1983. The NIMS data provide a valuable baseline for the systematic and regular monitoring and evaluation of program effectiveness, while the new system will supply the data for continuous measurement of our progress toward achieving the *Year 2000 Objectives for Mothers and Infants.*

James S. Marks, M.D., M.P.H.
Deputy Director for Public Health Practice
Center for Chronic Disease Prevention
and Health Promotion

Partial support for this project was provided by the National Institute of Child Health and Human Development, the Health Research and Services Administration, and the National Center for Health Statistics, CDC.

Overview of the National Infant Mortality Surveillance (NIMS) Project

Carol J.R. Hogue, PhD, MPH
Lilo T. Strauss, MA
James W. Buehler, MD
Jack C. Smith, MS

Summary

*A slowdown in the decline of infant mortality in the United States and a continuing high risk of death among black infants (twice that of white infants) prompted a consortium of Public Health Service agencies, in collaboration with all states, to develop a national data base of linked birth and infant death certificates for the 1980 birth cohort. This project, referred to as National Infant Mortality Surveillance (NIMS), provides neonatal, postneonatal, and infant mortality risks for blacks, whites, and all races in 12 categories of birthweights.**

Tabulations were requested for infants born in single and multiple deliveries. For single-delivery births, tabulations included birthweight, age at death, race of infant, and each of these characteristics: infant's live-birth order, sex, gestation, type of delivery, and cause of death; and mother's age, education, prenatal care history, and number of prior fetal losses at ≥20 weeks' gestation. An estimated 95% of eligible infant deaths were included in the NIMS tabulations. Analyses have focused on various components of infant mortality, including birthweight distribution of live births, neonatal mortality, and postneonatal mortality.

The most important predictor for infant survival is birthweight; survival increases exponentially as birthweight increases to its optimal level. The nearly twofold higher risk of infant mortality among blacks than among whites was related to a higher prevalence of low birthweights, to higher mortality risks in the neonatal period for infants with birthweights of ≥3,000 g, and to higher mortality during the postneonatal period for all infants, regardless of birthweight. Moreover, the black-white gap persisted for infants with birthweight of ≥2,500 g, regardless of other infant or maternal risk factors.

INTRODUCTION

Each year, approximately 40,000 U.S. infants die before reaching their first birthday. The 1990 Objectives for the Nation call for an infant mortality rate of no more than 12 deaths/1,000 live-born infants of any racial group for an overall national infant mortality rate of no more than 9 deaths/1,000 live-born infants (*1*). In 1986, the infant mortality rate was 18.0/1,000 live-born black infants and 8.9/1,000 live-born white infants (*2*). It is thus unlikely that the United States will achieve the 1990 objective for black infants, especially since black infant mortality rates decreased only 15.9% from 1980 (*3*) to 1986; to meet the 1990 objective, the rate for these infants would have to be reduced by 33.3% within the 4 years that remain in the period.

*Neonatal mortality risk = number of deaths of infants <28 days of age/1,000 live births; postneonatal mortality risk = number of deaths of infants ages 28 days up to 1 year/1,000 neonatal survivors; and infant mortality risk = number of deaths of infants <1 year of age/1,000 live births.

Three observations should be kept in mind as the United States strives to attain the 1990 objective for infant mortality. First, success in improving survival for low-birthweight (i.e., <2,500 g) infants has not been accompanied by a parallel decrease in the frequency of low birthweight—the most important determinant of infant survival (*4-11*). Of all infants born in 1980 who died, more than 60% were of low birthweight (*12*). Second, other industrialized nations have already achieved lower infant mortality rates (*11,13,14*). Third, although mortality rates have decreased for both white and black infants, neonatal and postneonatal mortality rates for black infants continue to be approximately twice the rates for white infants (*8,15,16*).

Epidemiologic analyses of low birthweight and infant mortality can guide health planners in developing and assessing interventions to reduce infant mortality. By identifying problems in maternal and infant care, health planners can target high-risk groups for more intensive interventions. Calculation of mortality risks by birthweight and other characteristics—which is essential to such analyses—requires linkage of individual birth and death certificates. Despite its importance, such linkage had not been done nationally since that done for infants born in 1960 (*17*).

The National Center for Health Statistics (NCHS), CDC, has an ongoing project to produce an annual, national, linked birth and infant-death file beginning with the 1983 birth cohort. The 1983 and 1984 files were released in 1989; the birth-cohort files for 1985 and 1986 are scheduled for publication over the next few years (*18*). To provide a more immediate data source between 1960 and future national linkages and to identify issues to be addressed before a national linked file could be implemented, CDC implemented the 1980 NIMS project. The sections below present the history and rationale of the NIMS project, its design and methods, and basic analyses of differences in infant mortality for blacks and for whites.

More details on the design, methods, and results of basic analyses are provided in an unpublished document, the unabridged NIMS report. Numerous references are made to the unabridged report in this surveillance summary. *MMWR* subscribers who need the longer, more detailed NIMS report may request a copy by writing to the Pregnancy Epidemiology Branch, Division of Reproductive Health, Mailstop C06, Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control, Atlanta, GA 30333.

HISTORY AND RATIONALE

In May 1983, CDC sponsored a meeting with representatives of the Association for Vital Records and Health Statistics, state directors of Maternal and Child Health, the American Academy of Pediatrics, the American College of Obstetricians and Gynecologists, NCHS, and the National Institute of Child Health and Human Development (NICHD). The participants agreed to assemble a national, birthweight-specific infant mortality data base by means of collecting data from all states with available linked birth and infant death records. CDC received partial funding from NICHD, NCHS, and the Health Resources and Services Administration (HRSA). Key to this project was the full cooperation that CDC received from all states and other vital registration reporting areas.

States provided necessary programming support, computer time, and professional and clerical time. To minimize the workload for approximately half the states that had linked certificates but did not have the data in machine-readable records, CDC requested tabular data from all the states rather than individually linked records

on computer tape. This data-collection method enabled all the states to participate in the surveillance and allowed this national compilation to be done relatively quickly.

The planning group recommended collecting birthweight-specific infant mortality data for the cohort of infants born in 1980. Selection of that year allowed sufficient time for linkages to have been completed and allowed a 20-year follow-up from the most recent national linkage done by NCHS (for infants born in 1960).

Finally, the planning participants urged a prompt dissemination of the information. The mechanisms to accomplish this recommendation included a NIMS Conference (May 1-2, 1986), preliminary data analyses (*12,19*), a preliminary version of this NIMS report—with detailed tabulations and methods—distributed at the NIMS Conference and on request by mail, 12 scientific articles in a special issue of *Public Health Reports* (*20*), followed by others (*21,22*), and a public-use tape (to be released in 1990). The public-use tape and documentation will be available through the National Technical Information Service.

DESIGN AND METHODS

Fifty-three vital statistics reporting areas participated in the NIMS project: 50 states, New York City, the District of Columbia, and Puerto Rico (subsequently referred to as "states"). The national-level tabulations do not include Puerto Rico. All states were able to link birth and death certificates for infants who were born alive in 1980 and who died within the first year of life (death in 1980 or 1981). We requested each state to provide data for all infant deaths for resident births in 1980, regardless of state of residence at death. State of residence was defined as state of mother's residence at the time she gave birth. The request was limited to data for live births involving birthweights of ≥500 g. Assuming that all infants weighing <500 g died during the neonatal period, we added data for those births to the death data provided by the states; this sum gave us the total number of infant deaths.

Information on all resident births for each state serves as the denominator for the calculation of infant mortality risks. To reduce the reporting burden for each state, CDC generated denominators for states (except Maine and New Mexico, as described in Appendix II of the unabridged report) from the computer tape of 1980 natality records produced by NCHS. We also used the NCHS natality tape for information on live births of <500 g.

Because the NIMS data set is for deaths occurring within a birth cohort rather than for births and deaths occurring in a given year, we use the term mortality "risk" instead of "rate." The neonatal mortality risk (NMR) was defined as the number of neonatal deaths (survival of <28 days)/1,000 live births, the postneonatal mortality risk (PNMR) as the number of postneonatal deaths (survival 28 days up to 1 year)/1,000 neonatal survivors, and the infant mortality risk (IMR) as the number of infant deaths (survival <1 year)/1,000 live births.

Birthweights were divided into 250-g intervals for infants born weighing 500 g-1,499 g, into 500-g intervals for those between 1,500 g and 4,499 g, into a <500-g interval for those between 227 g and 499 g, and into a ≥4,500-g interval for infants born weighing 4,500 g-8,165 g. Birthweights of <227 g (8 oz), those of >8,165 g (18 lb, 0 oz), and missing values were included with unknowns. All references to weight in this report refer to weight at birth.

States provided CDC with the number of infant deaths by birthweight and age at death (neonatal and postneonatal) for single deliveries, by race (blacks, whites, and

all races), and by plurality. The NCHS algorithm was used to determine race of infant according to the race of both parents (*23*). Hispanics have emerged as a major ethnic group in the United States having distinct reproductive life histories (*24-28*). However, because states use a variety of methods to define Hispanics (*24-26*), a national study of Hispanics could not be done with the NIMS data. Puerto Ricans are described in a separate report (*29*), and information on Hispanics in California and New York City is provided in Appendix V of the unabridged report. Native Americans, Asians, and Pacific Islanders in selected states have also been analyzed (*21* and CDC unpublished data).

We requested separate tabulations for infants born in single and in multiple deliveries. For single deliveries, we obtained tabulations by birthweight, age at death, race, and each of the following characteristics: infant's live-birth order, sex, gestation, type of delivery (vaginal or cesarean section), and the specific underlying cause of death (using the *International Classification of Diseases*, 9th Revision) (*30*); and mother's age, education, prenatal care history, and number of previous fetal losses at ≥20 weeks' gestation. Type of delivery is not recorded on the NCHS natality tape; therefore, we have death data only for type of delivery.

Definitions used for the tabulation of these characteristics paralleled as much as possible those for natality statistics used by NCHS. Details of the definitions for each characteristic are provided in Appendix I, unabridged report. Occasionally, states had some difficulty using the definitions (see Appendix II and *31*). Presentation of mortality risks for individual characteristics includes only those data for states that reported the given variable substantially as the definitions provided (see Appendix III.B, unabridged report). The number of states excluded from particular tables varied from two for infant's sex to 19 for gestational age of infants born in multiple deliveries (see Appendix III.B, Table A-IV, unabridged report).

Information on the number of prenatal care visits and the month prenatal care began was tabulated by birthweight rather than by gestational age. Although number and timing of prenatal care visits are confounded by duration of gestation, gestational age is one of the least reliable variables obtained from birth certificates and is missing for approximately 20% of births (*32*).

After states provide natality data to NCHS, final processing of data occurs, such as imputing unknown or extreme values for selected variables. For births in 1980, NCHS assigned a value by imputation for unknown race and maternal age. In obtaining data for deaths by these characteristics (race and maternal age) from individual states, we could not recreate this imputation procedure. However, we did use the NCHS method of assigning unknown plurality to the category of single delivery. In NIMS, unknown race was included only in tabulations for all races and was not distributed to other racial groups. We assigned unknown maternal age to known categories proportional to the distribution of known values. Unknown values of other maternal and infant characteristics were handled similarly (see Appendix III.A, unabridged report). Unknown race is rare, since race for both parents must be unknown before the child's race is classified that way. Exclusive of data for New Mexico (see Appendix II, unabridged report), NCHS imputed race for only 0.36% of births.

For calculation of mortality risks, we assigned infants with unknown birthweight (0.2% of births and 3.3% of infant deaths) to birthweight categories according to the proportion of births and deaths with known birthweight. Appendix III of the unabridged report includes details of the procedure used.

To promote uniformity in reporting and tabulating deaths, we prepared a detailed set of instructions for the states and provided extensive technical assistance via telephone (*31*). After receiving the data, we conducted editing checks that included visual examination and graphing of birthweight distributions, birthweight-specific neonatal mortality, and birthweight-specific postneonatal mortality for each state. States provided information regarding the death certificates that they could not link (*33,34*). To estimate both state-specific and total underreporting of infant mortality related to failure to link death certificates with corresponding birth certificates, we produced a synthetic cohort of infant deaths among infants born in 1980 (see Appendix IV.B, unabridged report, and *33,34*). We obtained the expected number of deaths by selecting from NCHS annual mortality tapes those deaths in 1980 and 1981 that occurred among U.S. residents <1 year of age who were born in 1980 (see Appendix IV.B, unabridged report). The infant death certificate does not have the infant's residence at birth but does include the infant's residence at death and place of birth and death. Several estimates of unreported deaths by state of residence at birth can be obtained by using different assumptions of the correlation of each of these three items to residence at birth (see Appendix IV, unabridged report, and *33,34*). One such analysis is presented in this overview.

Our analyses of U.S. infant mortality focus on three components: birthweight distribution of live births, neonatal mortality, and postneonatal mortality. We treat these components separately because interventions aimed at improving each one differ substantially. For example, reducing low birthweight requires identifying the risk factors for low birthweight that are present before pregnancy and during the prenatal period. On the other hand, reducing neonatal mortality focuses not only on raising birthweight but also on improving intrapartum and newborn care. The latter improvement entails regionalizing perinatal services and identifying infants who might be at high risk of mortality following their release from the hospital. Intervention to reduce postneonatal mortality focuses on improvement of well- and sick-child care and on intensive follow-up of infants at high risk of postneonatal mortality. We also examine the birthweight distribution of neonatal, postneonatal, and infant deaths to determine how deaths of lighter and heavier infants contribute to overall IMR.

The analysis presented here can focus attention on those groups of infants for whom improvement in survival would have the greatest overall impact on reducing infant mortality. Results are for single-delivery births only. Infants born in multiple deliveries are included in the report but are not represented in our results. This group, which accounted for 10% of deaths of both black and white infants (*19*), may be the subject of forthcoming analysis.

RESULTS

Birthweight Distribution

In 1980, there were 3,542,995 single deliveries (Table 1). Infants with birthweight of <1,500 g comprised 1.0% of all live births but comprised 2.1% of black live births. Likewise, infants in the intermediate low-birthweight category of 1,500 g-2,499 g comprised 5.0% of all births but 9.2% of black births. This birthweight discrepancy indicated that although blacks comprised 16.2% of single-delivery births, among

lower-weight infants blacks comprised 39.8% of those weighing <500 g, 35.3% of those weighing 500 g-1,499 g, and 29.8% of those weighing 1,500 g-2,499 g. Within each birthweight category of births <2,500 g, the risk for black infants' being born with low birthweight was over twice that for whites. At the higher birthweight extreme, however, in 1.9% of all births, but in only 0.8% of black births, the infants weighed ≥4,500 g.

Birthweight-Specific Infant Mortality

Neonatal mortality. Neonatal mortality decreased sharply with increasing birthweight up to 4,000 g for both blacks and whites (Table 2). When we used data with unknown values distributed among known values, the NMR for single-delivery infants weighing <1,500 g at birth was 431.2 deaths/1,000 live births, whereas the risk was 2.1 deaths/1,000 live births for single-delivery infants weighing ≥2,500 g. Infants weighing 500 g-999 g at birth had an almost 400-fold relative risk when compared with those weighing 3,000 g-3,999 g. Compared with whites, black infants weighing <3,000 g at birth experienced a lower birthweight-specific neonatal mortality, whereas the birthweight-specific NMR for heavier black infants was much higher (Table 2 and Figure 1).

Postneonatal mortality. Postneonatal mortality decreased with increasing birthweight up to 4,000 g, although the slope was not so steep as for neonatal mortality (Table 2 and Figure 2). Within all birthweight categories, blacks experienced higher postneonatal mortality than did whites. The overall relative risk of 2.1 was higher than all birthweight-specific relative risks because of the greater preponderance of black neonatal survivors in the lower birthweight ranges.

For neonatal survival, optimal birthweight for blacks was in the 3,000-g to 3,499-g category, while optimal birthweight for whites was in the 3,500-g to 3,999-g category. For postneonatal survival, the optimal categories were 500 g more for both blacks and whites. A comparison of these optimal groups showed that the IMR for blacks was 2.1 times that for whites. This risk is slightly higher than the overall relative risk of infant mortality for black infants (2.0). This overall risk reflects higher birthweight-specific neonatal mortality for black infants weighing ≥3,000 g, higher postneonatal mortality for black infants of all birthweights, and the greater proportion of black infants weighing <3,500 g at birth. Optimal birthweights in Table 2 differ somewhat from those reported elsewhere (*32*) because this table included unknown gestational ages and birthweights; these data were distributed proportionately to known birthweights and gestational ages (see Appendix III.A, unabridged report).

Birthweight Distribution of Deaths

Two-thirds of infant deaths occurred during the neonatal period (Table 3). Of those infants, more than half had birthweights of <1,500 g. Those infants, who comprised less than 1% of all live births, accounted for almost 40% of all infant deaths. Another two-fifths of infant deaths occurred among the 94% of infants with birthweights of ≥2,500 g. In the postneonatal period, those with birthweights of ≥2,500 g represented about three-fourths of deaths. Infants weighing <500 g at birth accounted for 10.7% of all deaths of black infants and 6.3% of all deaths of white infants with known birthweight.

States differ in the race-specific proportions of deaths of infants with birthweight of <500 g (see Appendix IV.C, unabridged report, and *35*). This difference may be due

to varying practices of recording such deliveries as live births or fetal deaths. If all recorded live-born infants weighing <500 g are excluded, the NMR for white infants with birthweights of <1,500 g is reduced 10.7%, from 441.9 to 394.4/1,000 live births. The corresponding NMR for black infants is reduced 15.1%, from 406.5 to 345.1/ 1,000 live births. Infant mortality is thereby reduced 7.2% overall, representing a 6.1% reduction for whites (from 9.3-8.7/1,000 live births) and a 10.2% reduction for blacks (from 18.9-17.0/1,000 live births). Postneonatal mortality is not affected, since all infants with birthweights of <500 g are assumed to have died during the neonatal period.

Risk Factors for Infant Mortality

Sex. Regardless of race, males experienced higher birthweight-specific infant mortality than did females (Table 4). However, the female advantage was proportionately somewhat higher for infants with birthweights of ≥1,500 g and for all white infants.

Gestational age. For each reported gestational age, infant mortality decreased with increasing birthweight. At virtually all gestational ages, blacks weighing <2,500 g had lower infant mortality than did whites. The exceptions were infants weighing <1,500 g whose gestational ages were reported as 40 and 42-45 weeks (Table 4)—gestational ages that most likely represented misclassified values that we discuss subsequently. White infants weighing ≥2,500 g but born after a gestation of <37 weeks also had higher gestation-specific infant mortality. From 37 weeks on, however, black infants in this birthweight category experienced higher gestation-specific infant mortality. Several combinations of birthweight and gestational age undoubtedly included a large proportion of infants whose gestational age was incorrectly reported. Gestation- and birthweight-specific measures of IMR for these categories will be misleading because of this misclassification. These categories are noted in Table 4. Racial differences in birthweight- and gestation-specific infant mortality are explored in greater detail elsewhere (*32*).

Live-birth order. Second-born infants experienced lower infant mortality (10.4/1,000 live births) than infants of other birth orders (Table 4). However, among infants with birthweights of ≥2,500 g, those who were first-born experienced the lowest infant mortality among both blacks and whites. Among those heavier infants, infant mortality increased steadily with increasing birth order except for lower mortality for black infants of birth order 6 or higher. For specific birth orders, IMRs were 58% to 77% higher for those blacks than for whites.

Maternal age. Infant mortality decreased with increasing maternal age through 30-34 years of age but increased thereafter (Table 4). Optimal maternal age was 25-29 years for black mothers and 30-34 years for whites. Differences in infant mortality by maternal age were most pronounced for infants weighing ≥2,500 g. Heavier black infants experienced higher mortality than whites, regardless of their mothers' ages. IMRs associated with young maternal age primarily relate to a lower birthweight distribution, especially for neonatal mortality differentials (*36*).

Maternal education. Infant mortality declined with increasing level of maternal education for both races but did so more steeply for infants born to white women and, for both races, for infants born weighing ≥2,500 g (Table 4). Heavier black infants also experienced higher mortality, regardless of their mothers' educational levels.

Prenatal care. Infants born to mothers who obtained prenatal care beginning in the first trimester experienced substantially lower infant mortality (Table 4). This trend was most pronounced for infants weighing ≥2,500 g but was also present for those weighing between 1,500 g and 2,499 g. In part, because of differences in birthweight distributions for black infants whose mothers received late prenatal care, the IMR for those infants was lower than that for black infants whose mothers received prenatal care beginning during the first trimester. Black-white differences in birthweight-specific infant mortality persisted for infants of women obtaining prenatal care beginning in the first trimester.

Completeness of NIMS Data

There were 2,104 fewer deaths in NIMS than were predicted by using the synthetic cohort derived from 1980 and 1981 mortality tapes (Table 5). This table reflects an estimated underreporting of 4.6%; however, the impact varied among the states. In seven states, NIMS reported more deaths based on residence at birth than the synthetic cohort number of deaths based on residence at death. There was exact agreement in two states, and 2,159 fewer deaths were reported in the NIMS data for 42 states. Eight states reported >10% fewer deaths than were predicted from the synthetic cohort (see Appendix IV.B, Table VI1, unabridged report). These eight states included 44.8% of all estimated unreported deaths but only 15.5% of all deaths in the United States.

We asked states to report the number of death certificates that they were unable to link with birth certificates. Because state of residence at birth is not reported on death certificates, we could not estimate directly the effect of these unlinked certificates on state-specific data concerning resident IMRs. However, we could approximate the impact by examining unlinked certificates for deaths of infants who were likely to have resided in the given state at birth. The likelihood that an unlinked death certificate is for an infant who resided at birth in the given state is higher if the state of residence at death is also the state in which both birth and death occurred; of the 2,604 reported unlinked certificates, 1,202 met these criteria. With the number of these deaths used as the numerator and the number of expected deaths (from the synthetic cohort) as the denominator, reported unlinked certificates of six states were ≥5% of expected resident deaths. Three of these six states were also among the eight with >10% fewer linked deaths reported than expected from the synthetic cohort. This finding suggests that the chief problem with unlinked certificates may be one of in-state linkage. The other five states with >10% discrepancy between linked and predicted infant deaths reported very few unlinked certificates of any kind. This finding suggests that 1) the states may need to revise their definition of what kind of death to link, 2) they are unaware of interstate linkage gaps or do not have the resources to improve interstate linkage efforts, or 3) the synthetic cohort estimate of expected deaths may be relatively invalid for those states.

DISCUSSION

In 1980, there were 3,542,995 single-delivery and 69,912 multiple-delivery infants born in the United States. In 1980-1981, there were 43,217 deaths among these infants, for a total IMR of 12.0/1,000 live births. This number can be compared with the infant mortality rates reported by NCHS of 12.6 and 11.9 infant deaths/1,000 live births in 1980 and 1981, respectively (*3*). The difference in IMR as measured in the NIMS

project and the infant mortality rates for 1980 and 1981 results in part from the inherent difference between risk and rate. The former is based on the experience of a birth cohort, whereas the latter is a period measure based on occurrences of deaths in a given year divided by births in that year. In times that have a fairly steady birth rate and a declining IMR, the period rate will overestimate the risk of mortality for that year's birth cohort. However, because two-thirds of the infant deaths occurred in the neonatal period, the 1980 infant mortality rate should closely approximate the IMR for the 1980 birth cohort. If a correction factor for the estimated underreporting of infant deaths in NIMS of 4.6% is added to the NIMS total, the resultant IMR for the 1980 birth cohort would be 12.5/1,000 live births, within 0.1/1,000 of the 1980 infant mortality rate.

Factors that increased the risk of infant mortality for single-born infants included low or very high birthweight, black race, male sex, short or long gestation, birth order (all but second), maternal age (younger or older), lower level of maternal education, and lack of prenatal care during the first trimester. Of these, the most important predictor for survival was birthweight: survival improved exponentially as birthweight increased to its optimum level (3,000 g-3,999 g for blacks and 3,500 g-4,499 g for whites, based on the neonatal and postneonatal mortality components of birthweight-specific infant mortality discussed above) (Table 2 and Figures 1, 2).

Overall, black infants had over twice the risk whites had of dying in their first year. This risk was related both to a higher prevalence of low birthweight and to higher mortality risks in the neonatal period for infants weighing ≥3,000 g and in the postneonatal period for all infants, regardless of birthweight. These results parallel state-specific analyses of black-white differences in neonatal and infant mortality (*15,16*).

Proportionately, more than three times as many black as white newborns have birthweights of <500 g. If these infants are excluded, the relative risk of neonatal mortality for blacks compared with whites drops from 2.01 to 1.87. Some live births of infants weighing <500 g are classified as fetal deaths, but this tendency is probably no more frequent for white than for black deliveries. Thus the true risk of neonatal death for small black infants—and thus the true black-white gap—is probably even greater than is reported.

Characteristic-specific analyses of black-white differences in infant mortality reveal that regardless of other infant or maternal risk factors, black infants were up to twice as likely as white infants to die within their first year of life. This gap is most pronounced for infants with birthweights of ≥2,500 g. The exceptions to this general finding were lower neonatal mortality among black infants weighing <3,000 g and lower infant mortality for black infants of <37 weeks' gestation (*32*).

Overall infant mortality risks are associated with maternal characteristics that reflect social-class differentials in access to and availability of health care. Prenatal factors affecting birthweight—as well as postnatal factors affecting infant care—contribute to increased infant mortality for socially disadvantaged infants, although the relative contributions of these components of infant mortality vary among different groups of infants. Part of the black-white gap is related to the relatively disadvantaged status of blacks in the United States. However, the widespread differences between black and white infant mortality across all maternal characteristics reported on birth certificates suggest that there may also be a further problem with access to effective health care for black infants and pregnant black women.

National black-white differences in infant mortality are explored in a series of articles (*20-22*) dealing with the composite effect of birthweight and gestation on the excess black infant mortality (*32*), regional variations in race-specific infant mortality (*37*), differences in cause-specific mortality (*38,39*), the effect of maternal age on black-white differences in infant mortality (*22,36*), and the change in race-specific infant mortality between the 1960 and the 1980 birth cohorts (*40*). With the exception of deaths resulting from congenital anomalies, all analyses point to the same conclusion: Far more effective strategies need to be developed and applied 1) to decrease the incidence of low birthweight, especially among black infants, 2) to increase neonatal survival for black infants weighing ≥3,000 g, and 3) to increase postneonatal survival for all black infants.

Three potential sources of bias exist with limitations in the NIMS data: 1) underestimation of cohort mortality risk through failure to link data for deaths and births, 2) underascertainment of death through failure to file death certificates, and 3) lack of congruity between numerator data (from state tabulations) and denominator data (from the NCHS natality tape). The first two are inherent biases with vital records analyses; the third is unique to the NIMS methodology.

As to the extent of underestimated mortality relative to unlinked deaths, NIMS data include an estimated 95.4% of all reported infant deaths to U.S. resident infants born in 1980. The 4.6% estimated underreporting of known deaths is related in part to problems with state-level linkage. First, when vital events do not occur within the state of residence, linkage requires transferring certificates to the proper state for recording and linking. Since death certificates do not include information on place of residence at birth, appropriate transfer may be difficult. Second, there may not be a birth certificate for a reported infant death, especially for an early neonatal death of a very small infant. Third, when information necessary for the linkage is inaccurately recorded, linkage is less likely to occur. When linkage does not occur for any of these reasons, the death cannot be included in cohort mortality risks.

The extent of underestimating IMRs is not uniform throughout the states. The eight states that reported >10% fewer deaths than expected through the synthetic cohort comprised nearly half of all the estimated underreporting. Also, postneonatal deaths, especially out-of-state events, are proportionately more underreported than earlier infant deaths (*33,34*). The same may be true of deaths of black infants overall (*33*). Because the extent of underreporting was small for the United States as a whole, these state-level biases probably do not affect national results in measurable ways. However, for specific states, the difference between NIMS estimates and true state-specific risks could be substantial. For this reason, persons examining state-level NIMS data should examine the estimated extent of underreporting (see Appendix IV.A-B, unabridged report, and *41*).

Regarding the underestimation of cohort mortality resulting from unreported infant deaths, neither NIMS data nor NCHS data include deaths for which there were no death certificates. Among infants with birthweights of <1,500 g, unregistered deaths have been traced to problems in vital records registration (*42*); however, such underreporting has been lower in more recent reports (*43,44*). As states have become more aware of the need to track infants whose birthweights are very low, their reporting of infant deaths may have improved. Another registration problem is the failure to report deaths of live-born infants who die very soon after birth. These infants are sometimes reported as fetal deaths. The perinatal mortality risk that

includes fetal deaths will include the risk for those infants; an examination of birthweight-specific perinatal mortality risks reveals patterns similar to those found for NIMS IMRs (*40*).

The third potential source of bias was the use of different data sources for births (NCHS computer tapes) and deaths (state reporting) of infants weighing ≥500 g. NCHS birth reporting could be less complete than state-based death reporting because NCHS uses an earlier cutoff date for inclusion in its birth file than that used by some states for inclusion of death reports. On the other hand, NCHS reporting of births for a given state may be more complete because NCHS is not dependent on the interstate exchange of vital records. For the nine states for which we had access to both NCHS and state birth tapes, we investigated the differences between state and NCHS reports of births of infants weighing ≥500 g as a proxy for estimating the differences in the two sources of data for births and deaths. We found that the differences between states' reported births and births reported by NCHS for those states were small (see Appendix IV.C, unabridged report).

We therefore concluded that when bias does occur, it probably results in underestimating the black-white infant mortality differential. Our conclusions regarding the black-white gap are thus somewhat conservative. Biases related to analyses of specific characteristics are discussed in the Appendices of the unabridged report.

The NIMS project represents phase I of a two-stage process to develop routine reporting of national birthweight-specific infant mortality data. Phase II is the annual microlevel tape, being produced by NCHS, that begins with the 1983 birth cohort. A report on the pilot stage of phase II is presented elsewhere (*18*). Besides compiling interim national data, NIMS has provided insight into developing and improving this ongoing system. We have identified states with particular linkage problems and have isolated problems with definitions of vital records variables (see Appendix II, unabridged report, and *31*).

Through NIMS, we have explored the usefulness of linked birth and infant death record data for program planning and evaluation (*45*). The NIMS Conference brought together representatives from all states. Participants—including vital registrars, health statisticians, and maternal and child health directors—discussed problems of linkage as well as uses of linked vital records for program planning, targeting, and evaluation (*45*). The examination of birthweight distributions, birthweight-specific infant mortality, and birthweight distributions of infant deaths can provide insight into targeting programs more effectively and identifying problem areas for more intensive program evaluation.

Table 1. Number and percentage distribution of live births, by birthwe

Race	Birthweight <500	500-999	1,000-1,499	1,500-1,999	2,000-2,499	2,500-2,999	3,000-3,499
Number							
Blacks	1,128	4,815	6,090	12,093	40,638	138,935	224,2
Whites	1,630	7,775	11,364	25,046	92,947	405,910	1,051,3
All races*	2,832	12,920	17,999	38,302	138,510	568,680	1,325,4
Percentage							
Blacks	0.2	0.8	1.1	2.1	7.1	24.1	39.0
Whites	0.1	0.3	0.4	0.9	3.3	14.3	36.9
All races*	0.1	0.4	0.5	1.1	3.9	16.1	37.4

*All races includes unknown race and infants of races other than black and wh
Source: Data are from NCHS natality tape, except for Maine and New Mexico

Table 2. Infant mortality risk by birthweight*, age at death, and race,

Race	Birthweigh <500†	500-999	1,000-1,499	1,500-1,999	2,000-2,499	2
Neonatal deaths/1,000 live births						
Blacks	1,000.0	615.6	131.3	36.1	10.6	
Whites	1,000.0	660.8	212.1	61.6	18.3	
All races§	1,000.0	647.6	186.5	53.9	16.0	
Postneonatal deaths/1,000 neonatal survivors						
Blacks	—	157.1	49.8	24.2	11.6	
Whites	—	115.0	43.7	18.9	9.4	
All races§	—	135.2	45.8	20.7	10.2	
Infant deaths/1,000 live births						
Blacks	1,000.0	676.0	174.6	59.4	22.1	
Whites	1,000.0	699.8	246.5	79.3	27.5	
All races§	1,000.0	695.2	223.7	73.5	26.0	

*Number of infants with unknown birthweight were distributed according to p
†See Design and Methods section.
§All races includes unknown race and infants of races other than black and wh

rthweight and race, single-delivery infants born in 1980

eight (grams)					
3,000-3,499	3,500-3,999	4,000-4,499	≥4,500	Unknown	Total
224,234	116,282	25,139	4,702	1,250	575,306
051,300	897,828	286,208	59,908	5,941	2,845,857
325,476	1,045,360	319,086	66,279	7,551	3,542,995
39.0	20.2	4.4	0.8	0.2	100.0
36.9	31.5	10.1	2.1	0.2	100.0
37.4	29.5	9.0	1.9	0.2	100.0

nd white.

xico (Appendix II, unabridged report).

race, single-delivery infants born in 1980

weight (grams)					
2,500-2,999	3,000-3,499	3,500-3,999	4,000-4,499	≥4,500	Total
3.6	2.4	2.5	2.8	-8.7	12.5
4.2	1.8	1.3	1.4	3.0	6.2
4.0	1.9	1.4	1.5	3.5	7.3
6.5	4.4	3.2	3.3	4.1	6.5
4.4	2.5	1.8	1.7	2.0	3.1
4.9	2.9	2.0	1.9	2.2	3.7
10.0	6.8	5.7	6.1	12.8	18.9
8.5	4.3	3.1	3.1	5.1	9.3
8.9	4.8	3.5	3.4	5.7	11.0

g to percentage of infants with known birthweight.

nd white.

Table 3. Number and percentage distribution of infant deaths among
at death, and race

Race	<500	500-999	1,000-1,499	1,500-1,999	2,000-2,499	2,500-2,999
						Birthweig
Number of neonatal deaths						
Blacks	1,128	2,821	761	418	409	471
Whites	1,630	4,933	2,314	1,483	1,630	1,624
All races*	2,832	7,992	3,203	1,972	2,110	2,189
Percentage of neonatal deaths						
Blacks	15.6	39.1	10.5	5.8	5.7	6.5
Whites	9.2	27.8	13.0	8.3	9.2	9.1
All races*	10.9	30.8	12.4	7.6	8.1	8.4
Number of postneonatal deaths						
Blacks	–	289	262	280	464	895
Whites	–	302	389	442	856	1,768
All races*	–	610	665	745	1,380	2,770
Percentage of postneonatal deaths						
Blacks	–	7.9	7.1	7.6	12.7	24.4
Whites	–	3.5	4.5	5.1	9.8	20.3
All races*	–	4.7	5.1	5.8	10.7	21.4
Number of infant deaths						
Blacks	1,128	3,110	1,023	698	873	1,366
Whites	1,630	5,235	2,703	1,925	2,486	3,392
All races	2,832	8,602	3,868	2,717	3,490	4,959
Percentage of infant deaths						
Blacks	10.4	28.6	9.4	6.4	8.0	12.6
Whites	6.2	19.8	10.2	7.3	9.4	12.8
All races*	7.3	22.1	9.9	7.0	9.0	12.8

*All races includes unknown race and infants of races other than black and

ong single-delivery infants born in 1980, by birthweight, age

weight (grams)						
–	3,000-3,499	3,500-3,999	4,000-4,499	≥4,500	Unknown	Total
	518	275	66	39	309	7,215
5	1,843	1,090	376	175	677	17,775
9	2,444	1,407	461	222	1,103	25,935
	7.2	3.8	0.9	0.5	4.3	100.0
	10.4	6.1	2.1	1.0	3.8	100.0
	9.4	5.4	1.8	0.9	4.3	100.0
5	970	374	82	19	30	3,665
3	2,632	1,644	491	121	58	8,703
9	3,786	2,113	596	145	142	12,952
	26.5	10.2	2.2	0.5	0.8	100.0
	30.2	18.9	5.6	1.4	0.7	100.0
	29.2	16.3	4.6	1.1	1.1	100.0
6	1,488	649	148	58	339	10,880
2	4,475	2,734	867	296	735	26,478
9	6,230	3,520	1,057	367	1,245	38,887
	13.7	6.0	1.4	0.5	3.1	100.0
	16.9	10.3	3.3	1.1	2.8	100.0
	16.0	9.1	2.7	0.9	3.2	100.0

and white.

Table 4. Infant mortality risk per 1,000 live births, by race, birthw born in 1980

Characteristic	Blacks				
	<1,500	1,500-2,499	≥2,500	Total	<1,500
Total	452.6	30.6	7.5	18.9	475.3
A. INFANT					
Sex					
Male	490.6	36.4	8.4	20.6	511.1
Female	416.0	26.0	6.5	17.2	439.2
Gestation (weeks)					
17-27	673.6¶	60.1¶	32.1¶	467.0¶	720.1¶
28-31	257.9	52.9	15.5¶	103.0¶	294.1
32-35	197.1	33.9	10.3	25.0	266.3
36	234.4¶	24.0	7.8	12.8	257.6¶
37	216.1¶	23.7	8.4	11.2	298.1¶
38-39	261.7¶	21.8	6.1	7.4	311.1¶
40	359.9¶	31.7	7.3	8.6	343.3¶
41	221.5¶	33.7	6.9	8.1	390.2¶
42-45	331.2¶	26.3	9.0	10.2	293.4¶
Live-birth order					
First	465.2	26.0	6.5	19.2	460.0
Second	455.5	32.5	7.5	18.7	500.4
Third	426.4	33.3	7.9	17.5	495.3
Fourth	440.4	37.4	8.6	18.8	473.9
Fifth	429.0	38.3	11.0	22.2	508.9
Sixth or higher	416.5	37.6	10.1	20.3	489.3
Age at death					
Neonatal	406.5	16.4	2.8	12.5	441.9
Postneonatal**	77.6	14.4	4.6	6.5	59.9

irthweight*, and selected characteristics†, single-delivery infants

Birthweight (grams)							
Whites				All races§			
,500	1,500-2,499	≥2,500	Total	<1,500	1,500-2,499	≥2,500	Total
75.3	38.5	4.4	9.3	469.4	36.3	5.0	11.0
11.1	46.5	5.0	10.4	505.0	43.5	5.6	12.1
39.2	31.6	3.8	8.2	432.7	30.0	4.3	9.7
20.1¶	114.7¶	34.9¶	529.0¶	706.5¶	90.7¶	34.6¶	509.3¶
94.1	84.9	16.9¶	136.7¶	283.4	73.2	16.1¶	125.0¶
66.3	40.2	11.3	29.4	244.9	38.6	11.2	28.3
57.6¶	33.1	8.6	14.0	250.2¶	30.6	8.6	13.9
98.1¶	30.1	6.5	9.3	279.4¶	28.0	7.1	9.9
11.1¶	26.7	3.9	4.8	300.6¶	25.3	4.3	5.3
43.3¶	34.3	3.9	4.5	353.0¶	33.6	4.4	5.1
90.2¶	34.8	3.6	4.1	334.1¶	34.6	4.1	4.7
93.4¶	45.6	4.8	5.6	299.7¶	40.4	5.4	6.3
60.0	33.7	4.1	9.5	463.4	31.7	4.5	11.0
00.4	44.3	4.3	8.8	489.9	41.0	4.8	10.4
95.3	40.4	5.0	9.2	471.8	38.0	5.6	10.8
73.9	46.0	5.2	9.8	459.2	43.4	6.0	11.9
08.9	54.8	6.2	11.6	459.8	48.3	7.3	14.2
89.3	54.9	6.3	12.1	460.6	48.0	7.5	14.6
41.9	27.5	2.0	6.2	431.2	24.2	2.1	7.3
59.9	11.4	2.5	3.1	67.0	12.4	2.9	3.7

Table 4. Infant mortality risk per 1,000 live births, by race, birthwe born in 1980 — Continued

Characteristic	Blacks				B
	<1,500	1,500-2,499	≥2,500	Total	<1,500
B. MATERNAL					
Age (years)					
10-14	535.8	38.9	13.1	36.0	529.0
15-19	439.2	30.8	8.8	21.2	482.6
20-24	458.8	28.4	7.3	18.5	476.3
25-29	459.6	31.9	6.2	17.0	488.7
30-34	461.4	30.1	6.4	17.1	462.2
35-39	445.6	38.8	7.8	19.3	450.9
40-44	351.3	41.0	9.4	19.6	502.3
45-49	0.0	06.6	23.7	35.0	385.5
Education (years)					
0-8	481.7	42.6	11.1	25.6	495.2
9-11	426.2	33.8	10.0	22.5	477.7
12	467.7	29.9	6.6	18.1	475.3
13-15	472.4	24.2	5.9	16.2	490.0
≥16	443.9	27.8	3.9	13.6	476.9
Month prenatal care began					
1-3	445.0	29.0	6.3	17.3	475.5
4-6	401.9	31.1	8.3	17.6	470.8
7-9	317.9	35.1	11.1	16.4	343.6
None	580.1	42.2	16.8	67.7	572.1

*Number of infants with unknown birthweight were distributed accordi
†Number of infants with a characteristic unknown were distributed characteristic.
‡All races includes unknown race and infants of races other than black a
§The mortality risk is not reliable in this gestation- and birthweight-specifi incorrectly reported gestational age.
**Deaths per 1,000 neonatal survivors.

rthweight*, and selected characteristics†, single-delivery infants

Birthweight (grams)							
Whites				All races§			
500	1,500-2,499	≥2,500	Total	<1,500	1,500-2,499	≥2,500	Total
9.0	65.7	7.1	25.0	531.2	47.6	10.6	31.5
2.6	37.7	6.4	13.6	463.9	35.0	7.1	15.8
3.3	40.5	4.6	9.4	473.3	36.8	5.1	11.1
3.7	37.7	3.8	8.0	482.2	36.4	4.1	9.2
2.2	35.2	3.6	7.8	461.5	34.1	4.0	9.0
0.9	39.3	4.3	9.3	449.1	40.1	4.8	10.8
2.3	66.2	5.9	14.1	457.1	58.5	6.6	15.1
5.5	11.4	10.0	21.1	286.4	116.9	10.4	22.6
5.2	45.6	7.5	15.1	485.6	44.8	8.2	17.2
7.7	37.9	6.7	13.7	454.6	36.0	7.7	16.3
5.3	40.4	4.2	8.9	473.7	37.4	4.6	10.6
0.0	39.4	3.4	7.4	484.2	34.6	3.8	8.8
6.9	38.3	3.0	6.7	467.5	36.1	3.1	7.3
5.5	37.5	4.0	8.5	467.5	35.3	4.3	9.7
0.8	40.7	5.7	11.0	444.7	37.0	6.3	12.6
3.6	40.8	7.6	10.8	342.1	39.0	8.6	12.4
2.1	49.4	9.9	38.3	576.1	48.3	12.1	48.7

cording to percentage of infants with known birthweight.
uted according to percentage of infants with known values for that

lack and white.
pecific category because a substantial portion of infants included in it had

Table 5. Estimated number of unlinked deaths: distribution of numbers of states*, and infant deaths, by difference between NIMS and synthetic cohort (SC)†

	Difference between number of deaths in NIMS and SC				
	NIMS ≥ SC	NIMS = 95.0-99.9% of SC	NIMS = 90.0-94.9% of SC	NIMS = 76.6-89.9% of SC	Total
Number of states	9	24	10	8	51
Number of deaths in SC	4,702	26,372	7,217	7,030	45,321
Number of deaths in NIMS	4,757	25,611	6,762	6,087	43,217
Difference	-55	761	455	943	2,104

*New York City is included with upstate New York; District of Columbia is included separately; Puerto Rico is excluded.
†Synthetic cohort (SC) includes U.S. resident deaths in 1980-1981 of infants born in 1980. Data are from the NCHS mortality tapes. State of residence in SC is at death; state of residence in NIMS is at birth.

Figure 1. Neonatal mortality risks by race and birthweight, United States, 1980 live birth cohort

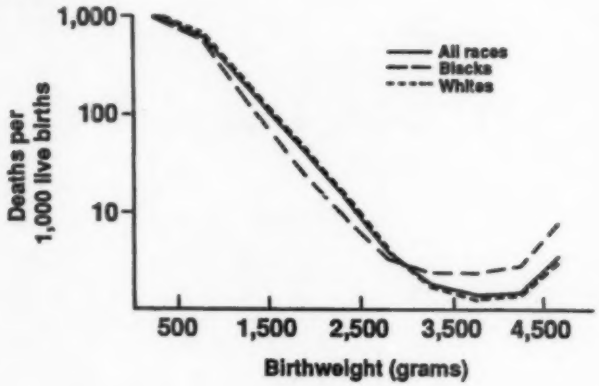
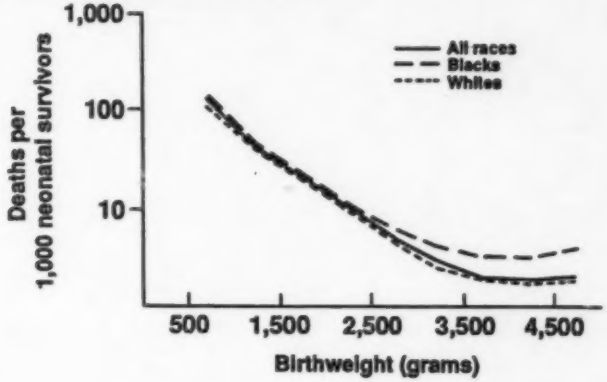


Figure 2. Postneonatal mortality risks by race and birthweight, United States, neonatal survivors of 1980 live birth cohort



References

1. Public Health Service. Pregnancy and infant health. In: Promoting health/preventing disease: objectives for the nation. Washington, DC: US Department of Health and Human Services, 1980:15-20.
2. NCHS. Advance report of final mortality statistics, 1986. Monthly Vital Statistics Report 37 (No. 6 suppl). Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, 1988:7.
3. NCHS. Advance report of final mortality statistics, 1981. Monthly Vital Statistics Report 33 (No. 3 suppl). Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, 1984:4.
4. Lee KS, Paneth N, Gartner LM, Pearlman MA, Gruss L. Neonatal mortality: an analysis of the recent trends in the United States. Am J Public Health 1980;70:15-21.
5. Williams RL, Chen PN. Identifying the sources of the recent decline in perinatal mortality rates in California. N Engl J Med 1982;306:207-14.
6. David RJ, Siegel E. Decline in neonatal mortality, 1968-1977: better babies or better care? Pediatrics 1983;71:531-40.
7. Kleinman JC, Kovar MG, Feldman JJ, Young CA. A comparison of 1960 and 1973-74, early neonatal mortality in selected states. Am J Epidemiol 1978;108:454-69.
8. Kleinman JC, Kessel SS. The recent decline in infant mortality. In: Health United States 1980. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, 1980; DHHS publication no. (PHS)81-1232.
9. Kleinman JC. Trends and variations in birth weight. In: Health United States 1981. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, 1987; DHHS publication no. (PHS)82-1232.
10. Lee KS, Paneth N, Gartner LM, Pearlman M. Very low birthweight rate: principal predictor of neonatal mortality in industrialized populations. J Pediatr 1980;97:759-64.
11. Guyer B, Wallach LA, Rosen SL. Birthweight standardized neonatal mortality rates and the prevention of low birth weight: how does Massachusetts compare to Sweden? N Engl J Med 1982;306:1230-3.
12. CDC. Years of potential life lost attributable to low birthweight—United States, 1980 birth cohort. MMWR 1986;35:188-90, 195.
13. Erickson D, Bjerkedal T. Fetal and infant mortality in Norway and the United States. JAMA 1982;247:987-91.
14. NCHS. Proceedings of the International Collaborative Effort on Perinatal and Infant Mortality, vol I. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, 1985; DHHS publication no. (PHS)85-1252.

15. Binkin NJ, Williams RL, Hogue CJR, Chen PM. Reducing black neonatal mortality: will improvement in birth weight be enough? JAMA 1985;253:372-5.
16. Alexander GR, Tompkins ME, Altekruse JM, Hornung CA. Racial differences in the relation of birth weight and gestational age to neonatal mortality. Public Health Rep 1985;100:539-47.
17. Armstrong RJ. A study of infant mortality from linked records by birth weight, period of gestation, and other variables, United States. Vital Health Statistics 20 (12). Hyattsville, Maryland: NCHS, 1972; DHEW publication no. (HSM)72-1055.
18. NCHS. Linked birth and infant death data set. Hyattsville, Maryland: US Department of Health and Human Services, Public Health Service, 1989.
19. CDC. National birthweight-specific infant mortality surveillance: preliminary analysis—United States, 1980. MMWR 1986;35:269-73.
20. Public Health Rep 1987;102:126-223.
21. VanLandingham MJ, Buehler JW, Hogue CJR, Strauss LT. Birthweight-specific infant mortality for Native Americans compared with whites, six states, 1980. Am J Public Health 1988;78:499-503.
22. Friede A, Baldwin W, Rhodes PH, et al. Older maternal age and infant mortality in the United States. Obstet Gynecol 1988;72:152-8.
23. NCHS. Public use data tape documentation, 1980 natality detail. Hyattsville, Maryland: US Department of Health and Human Services, 1982.
24. Giachello AL, Bell R, Aday LA, Anderson RM. Use of the 1980 census for Hispanic health services research. Am J Public Health 1983;73:266-74.
25. Hayes-Bautista DE. On comparing studies of different Raza populations. Am J Public Health 1983;73:274-6.
26. Selby ML, Lee ES, Tuttle DM, Loe HD. Ethnic differentials in infant mortality in an urban county: the case of Mexican Americans reexamined. Presented at the 111th Annual Meeting of the American Public Health Association, Population and Family Planning Section, Dallas, Texas, Nov. 14, 1983.
27. Gee SC, Lee ES, Forthofer RN. Ethnic differentials in neonatal and postneonatal mortality: a birth cohort analysis by a binary variable multiple regression method. Soc Biol 1976;23:317-25.
28. Williams RL, Binkin NJ, Clingman EJ. Pregnancy outcomes among Spanish-surname women in California. Am J Public Health 1986;76:387-91.
29. Becerra J, Kristal AR, Perez N, Buehler JW, Smith JC. Infant mortality and childbearing patterns among Puerto Rican Hispanics. Presented at National Infant Mortality Surveillance Conference, Atlanta, Georgia, May 2, 1986.
30. International Classification of Diseases, 9th Revision, Clinical Modification, vol I. Ann Arbor, Michigan: Commission on Professional and Hospital Activities, 1978.
31. Strauss LT, Freedman MA, Gunter N, Powell-Griner E, Smith JC. Experiences with linked birth and infant death certificates from the NIMS project. Public Health Rep 1987;102:204-10.
32. Sappenfield WM, Buehler JW, Binkin NJ, Hogue CJR, Strauss LT, Smith JC. Differences in neonatal and postneonatal mortality by race, birth weight, and gestational age. Public Health Rep 1987;102:182-92.
33. Lambert DA. Unlinked death certificates from the National Infant Mortality Surveillance project [Master of Science thesis]. Amherst, Massachusetts: University of Massachusetts, May 1986.
34. Lambert DA, Strauss LT. Analysis of unlinked infant death certificates from the NIMS project. Public Health Rep 1987;102:200-4.
35. Wilson AL, Fenton LJ, Munson DP. States reporting of live births of newborns weighing less than 500 grams: impact on neonatal mortality rates. Pediatrics 1986;78:850-4.
36. Friede AM, Baldwin W, Rhodes PH. Young maternal age and infant mortality: the role of low birth weight. Public Health Rep 1987;102:192-9.
37. Allen DA, Buehler JW, Hogue CJR, Strauss LT, Smith JC. Regional differences in birth weight-specific infant mortality, 1980. Public Health Rep 1987;102:138-45.
38. Buehler JW, Strauss LT, Hogue CJR, Smith JC. Birth weight-specific causes of infant mortality, United States, 1980. Public Health Rep 1987;102:162-71.
39. Berry RJ, Buehler JW, Strauss LT, Hogue CJR, Smith JC. Birth weight-specific infant mortality due to congenital anomalies, 1960 and 1980. Public Health Rep 1987;102:171-81.

40. Buehler JW, Kleinman JC, Hogue CJR, Strauss LT, Smith JC. Birth weight-specific infant mortality, United States, 1960 and 1980. Public Health Rep 1987;102:151-61.
41. Marks JS, Buehler JW, Strauss LT, Hogue CJR, Smith JC. Variation in state-specific infant mortality risks. Public Health Rep 1987;102:146-51.
42. McCarthy BJ, Terry J, Rochat RW, Quave S, Tyler CW Jr. The underregistration of neonatal deaths: Georgia 1974-77. Am J Public Health 1980;70:977-82.
43. Frost F, Kirkwood KS. Racial differences between linked birth and infant death records in Washington state. Am J Public Health 1980;70:974-6.
44. CDC. Birthweight-specific neonatal mortality rates—Kentucky. MMWR 1985;34:487-8.
45. Zahniser C, Halpin G, Hollinshead W, Kessel S, Koontz A. Using linked birth and infant death files for program planning and evaluation: NIMS workshop lessons. Public Health Rep 1987;102:211-6.

Appendix. NIMS TABLES

INDEX FOR NIMS TABLES

Set 1 (See unabridged report.)

1D. Number of Infant Deaths, by Birthweight, Plurality, Age at Death, Race, and Place of Residence, 1980 Birth Cohort, United States

Set 2 (See unabridged report.)

1R. Infant Mortality Risks, by Birthweight, Plurality, Age at Death, Race, and Place of Residence, 1980 Birth Cohort, United States

Set A/3

2. Infant Mortality, by Birthweight, Age at Death, Race, and Maternal Age: Singleton Infants, 1980 Birth Cohort, United States
3. Infant Mortality, by Birthweight, Age at Death, Race, and Number of Previous Live Births: Singleton Infants, 1980 Birth Cohort, United States
4. Infant Mortality, by Birthweight, Age at Death, Race, and Number of Other Terminations (≥20 weeks' gestation): Singleton Infants, 1980 Birth Cohort, United States (See unabridged report.)
5. Infant Mortality, by Birthweight, Age at Death, Race, and Maternal Education: Singleton Infants, 1980 Birth Cohort, United States (See unabridged report.)
6. Infant Mortality, by Birthweight, Age at Death, Race, and Sex of Infant: Singleton Infants, 1980 Birth Cohort, United States (See unabridged report.)
7. Infant Mortality, by Birthweight, Age at Death, Race, and Gestational Age at Birth: Singleton Infants, 1980 Birth Cohort, United States
8. Infant Mortality, by Birthweight, Age at Death, Race, and Type of Delivery: Singleton Infants, 1980 Birth Cohort, United States (See unabridged report.)
9. Infant Mortality, by Birthweight, Age at Death, Race, and Month Prenatal Care Began: Singleton Infants, 1980 Birth Cohort, United States
10. Infant Mortality, by Birthweight, Age at Death, Race, and Number of Prenatal Care Visits: Singleton Infants, 1980 Birth Cohort, United States (See unabridged report.)
11. Infant Mortality, by Birthweight, Age at Death, Race, and Grouped Cause of Death: Singleton Infants, 1980 Birth Cohort, United States

Set B/4

12. Infant Mortality, by Birthweight and Race: Multiple Birth Infants, 1980 Birth Cohort, United States
13. Infant Mortality, by Birthweight and Plurality: Multiple Birth Infants, 1980 Birth Cohort, United States
14. Infant Mortality, by Birthweight and Gestational Age at Birth: Multiple Birth Infants, 1980 Birth Cohort, United States
15. Infant Mortality, by Birthweight and Type of Delivery: Multiple Birth Infants, 1980 Birth Cohort, United States (See unabridged report.)

Appendices (See unabridged report.)

I. Definitions
II. State Notes
III. Surveillance Report Criteria for Unknowns
  A. Redistribution of unknowns
  B. Selection of states for inclusion in or exclusion from calculations of mortality risk
IV. Data Quality
  A. Unlinked death certificates
  B. Comparison of NIMS- and NCHS-reported deaths
  C. Comparison of state and NCHS birth reporting
V. Other Race and Ethnic Groups

References for Appendices

GUIDE TO TABLE-NUMBERING SCHEME

D indicates "death," i.e., number of infant deaths (Table 1 only).

R indicates "risk," i.e., infant mortality risk (Table 1 only).

Tables are repeated for neonatal/postneonatal/infant, plurality, and racial group as follows:

.1 indicates neonatal deaths, singleton infants.
.2 indicates postneonatal deaths, singleton infants.
.3 indicates infant deaths, singleton infants.
.4 indicates infant deaths, multiple birth infants.
A indicates all races.
W indicates whites.
B indicates blacks.

Examples:

1D.1A indicates a table showing the *number* of *neonatal deaths* for *singleton* infants of *all races.*

1R.2W indicates a table showing the *mortality risk* for *postneonatal deaths* for *singleton* infants of *white race.*

NOTES FOR TABLES

The following notes apply to the data tables for the National Infant Mortality Surveillance (NIMS) Report.

1. Definitions

BIRTH COHORT—States may vary in criteria used in creating their linked birth and death files and in completeness of certificate linkages (see Appendix IV, unabridged report).

INFANT DEATH—Death in a child <1 year of age. The *infant mortality risk* is the number of infant deaths/1,000 live births.

MORTALITY RISKS—Risks for the totals of all categories shown in various tables may differ slightly due to category-specific distribution of unknown birthweights for each table (see Appendix III.A, unabridged report).

NEONATAL DEATH—Death in a child <28 completed days of age. The *neonatal mortality risk* is the number of neonatal deaths/1,000 live births.

POSTNEONATAL DEATH—Death in a child ≥28 completed days and <1 year of age. The *postneonatal mortality risk* is the number of postneonatal deaths/1,000 infants surviving the neonatal period.

AREA OF RESIDENCE—State of mother's residence at time of infant's birth, regardless of state of occurrence of infant's birth or death or state of infant's residence at time of death. The term "states" is used as an abbreviation for "Vital Statistics Reporting Areas," which include the 50 states, the District of Columbia, and Puerto Rico. For New York, the number of deaths was reported separately by New York City and upstate New York, and data from these two sources were combined. Tables for the United States do not include Puerto Rico. States are grouped into "Regions" and "Divisions" according to U.S. Census definitions.

STATE PARTICULARS—

Delaware mortality data include 12 singleton infant deaths with known birthweight inadvertently coded as unknown birthweight.

District of Columbia mortality data for blacks include deaths of infants of all races other than whites (see Appendix II, unabridged report).

New York mortality data were provided separately by New York City and upstate New York. These are combined in all tables.

Oklahoma mortality data were not available for Oklahoma residents born out of state.

Tennessee mortality data are based on state of residence at both death and birth rather than at birth only. Also 40 neonatal deaths of multiple birth infants were inadvertently omitted from all tabulations involving multiple birth infants (Tables 12-15.4A) (see Appendix II, unabridged report).

TOTAL ≥500—The total number of deaths of infants of known birthweight ≥500 g excludes infants of unknown birthweight. This comment applies to the number-of-deaths tables 1D., 8, and 15 and not to the mortality risk tables, for which unknown events are distributed among the knowns. (See unabridged report.)

UNKNOWN CATEGORY—If a state could not provide a breakdown of its number of deaths in detailed categories for a given variable, the total number of deaths for that state was included in the unknown category. This situation could occur either because the variable was not collected on the birth certificate or included in the statistical file of the state or because the definition or categories available from the state deviated from the recommended definitions to an extent that would result in significant distortion in this report. Because of this inclusion of data in the unknown category, the total number of deaths for each birthweight category agrees for all tables of any categorization by age at death and race for singleton infants (tables 1D.1-1D.3 and 2.-11.) and for all tables for multiple birth infants (tables 1D.4 and 12.-15.).

2. Special footnoting convention

Comments that apply to all tables or to all tables of a certain type are either listed in the definitions above or are footnoted only the first time the comment is relevant, with the notation that the footnote applies to this "and all subsequent tables." It is therefore suggested that the reader review the definitions above and the footnotes for the first several tables. For example, specific state particulars applying to all tables are listed under State Particulars.

3. Special symbols for cells in mortality risk tables

The symbols "." and "*" may appear on any of the risk tables:

. Zero births or zero neonatal survivors in denominator

* >1,000 deaths/1,000 live births or/1,000 neonatal survivors (see Appendix IV, unabridged report)

The symbols "#" and "=" may appear on any of the postneonatal mortality risk tables:

Zero deaths reported for cell, negative value for number of neonatal survivors (see Appendix IV, Section C, unabridged report)

= Deaths reported for cell, negative value for number of neonatal survivors (see Appendix IV, Section C, unabridged report)

The situations represented by "*," "#," and "=" may occasionally arise because different data sources were used for the numerator and denominator in mortality risk calculations.

4. Mortality risk tables: United States definition

For mortality risk tables for the United States, the United States is defined for the various tables as follows (see Appendix III, Section B, unabridged report):

AREA OF RESIDENCE (Tables 1R.)—U.S. mortality risks are based on data from 52 vital statistics reporting areas. (See unabridged report.)

MATERNAL AGE (Tables 2.)—U.S. mortality risks are based on data from 49 vital statistics reporting areas.

NUMBER OF MOTHER'S PREVIOUS LIVE BIRTHS (Tables 3.)—U.S. mortality risks are based on data from 48 vital statistics reporting areas.

NUMBER OF MOTHER'S OTHER TERMINATIONS OF PREGNANCY ≥20 WEEKS' GESTATION (Tables 4.)—U.S. mortality risks are based on data from 39 vital statistics reporting areas. (See unabridged report.)

MATERNAL EDUCATION (Tables 5.)—U.S. mortality risks are based on data from 41 vital statistics reporting areas. (See unabridged report.)

SEX OF INFANT (Tables 6.)—U.S. mortality risks are based on data from 50 vital statistics reporting areas. (See unabridged report.)

GESTATIONAL AGE AT BIRTH, SINGLETON INFANTS (Tables 7.)—U.S. mortality risks are based on data from 45 vital statistics reporting areas.

MONTH PRENATAL CARE BEGAN (Tables 9.)—U.S. mortality risks are based on data from 44 vital statistics reporting areas.

NUMBER OF PRENATAL CARE VISITS (Tables 10.)—U.S. mortality risks are based on data from 43 vital statistics reporting areas. (See unabridged report.)

GROUPED CAUSE OF DEATH (Tables 11.)—U.S. mortality risks are based on data from 52 vital statistics reporting areas.

RACE, MULTIPLE BIRTH INFANTS (Table 12.)—U.S. mortality risks are based on data from 52 vital statistics reporting areas.

PLURALITY, MULTIPLE BIRTH INFANTS (Table 13.)—U.S. mortality risks are based on data from 51 vital statistics reporting areas.

GESTATIONAL AGE AT BIRTH, MULTIPLE BIRTH INFANTS (Table 14.)—U.S. mortality risks are based on data from 34 vital statistics reporting areas.

NIMS TABLES
Set A: Tables 2-11. Singleton Infants

Table 2. Infant Mortality, by Birthweight, Age at Death, Race, and Maternal Age: Singleton Infants, 1980 Birth Cohort, United States

	BIRTHWEIGHT (GRAMS)											
	NUMBER OF DEATHS						MORTALITY RISK[1]					
	<1500	1500-2499	2500-3999	>=4000	UNKNOWN	TOTAL	<1500	1500-2499	2500-3999	>=4000	TOTAL	<1500	>=2500
.1 NEONATAL DEATHS, SINGLETON INFANTS													
A. ALL RACES													
CATEGORY :													
10-14	151	32	29	0	7	219	481.0	29.9	3.7	0.0	21.9	132.4	3.6
10	0	0	0	0	0	0	.	.	0.0	.	0.0	.	0.0
11	0	0	0	0	0	0	0.0	0.0	0.0	.	0.0	0.0	0.0
12	8	1	0	0	0	9	618.4	29.6	0.0	0.0	38.5	192.4	0.0
13	28	4	4	0	0	34	659.9	24.7	3.0	0.0	21.2	143.4	2.9
14	117	27	25	0	7	176	452.2	31.0	4.0	0.0	21.7	128.6	3.8
15-19	3186	746	966	87	168	5153	421.1	19.8	2.2	2.5	9.6	87.0	2.2
15-17	1399	274	347	27	82	2129	426.9	17.9	2.2	2.6	11.0	90.6	2.2
15	280	46	55	4	16	401	450.9	18.2	2.4	3.3	14.4	106.4	2.5
16	463	81	125	9	30	708	428.3	16.8	2.5	2.6	11.5	91.6	2.5
17	656	147	167	14	36	1020	416.5	18.4	1.9	2.4	9.7	84.9	2.0
18-19	1787	472	619	60	86	3024	416.5	21.1	2.1	2.5	8.8	84.4	2.2
18	823	202	265	29	39	1358	397.3	19.9	2.1	3.0	9.1	83.2	2.2
19	964	270	354	31	47	1666	434.6	22.2	2.2	2.1	8.5	85.5	2.2
20-24	4616	1392	1959	216	341	8524	435.8	23.8	2.0	2.0	7.1	87.1	2.0
25-29	3617	1105	1772	197	264	6955	445.8	26.0	2.1	1.5	6.5	93.3	2.0
30-34	1803	541	933	127	151	3555	427.9	25.7	2.3	1.8	6.7	93.1	2.2
35-39	517	203	304	46	34	1104	413.7	30.8	2.9	2.2	8.1	91.5	2.8
40-44	106	47	63	8	15	239	422.5	37.1	3.8	2.5	10.6	98.6	3.6
45-49	6	9	4	1	0	20	286.4	116.9	4.5	5.7	17.4	153.2	4.7
UNKNOWN[2]	25	7	10	1	123	166							
TOTAL	14027	4082	6040	683	1103	25935	433.2	34.2	2.1	1.8	7.3	90.0	2.1
B. WHITES													
CATEGORY :													
10-14	33	17	10	0	3	83	529.0	50.5	3.1	0.0	20.0	161.0	2.9
10	0	0	0	0	0	0	.	.	0.0	.	0.0	.	0.0
11	0	0	0	0	0	0	.	.	0.0	.	0.0	.	0.0
12	3	0	0	0	0	3	1000	0.0	0.0	0.0	49.2	681.9	0.0
13	8	1	2	0	0	11	876.2	27.9	4.7	0.0	20.1	182.1	4.4
14	42	16	8	0	3	69	481.8	53.6	3.0	0.0	19.6	152.9	2.8
15-19	1842	591	630	66	98	3127	445.0	23.1	2.0	2.2	8.2	90.6	2.0
15-17	736	163	197	20	51	1167	442.3	20.2	1.9	2.4	9.3	93.0	1.9
15	134	21	23	3	6	187	482.1	18.7	1.8	3.4	12.5	115.2	1.9
16	234	54	71	6	21	406	461.4	21.6	2.3	2.0	10.5	100.7	2.2
17	348	88	103	11	24	574	416.0	19.7	1.7	3.3	7.9	82.7	1.8
18-19	1106	338	423	46	47	1960	446.9	24.8	2.0	2.2	7.7	89.1	2.0
18	499	145	172	22	20	858	425.4	24.2	1.9	2.6	8.0	89.1	1.9
19	607	193	251	24	27	1102	466.5	25.2	2.1	1.9	7.5	89.1	2.1
20-24	2815	1089	1501	173	214	5792	440.9	28.2	1.9	1.7	6.0	86.3	1.9
25-29	2503	890	1432	174	192	5191	458.5	28.8	2.0	1.5	5.7	93.2	1.9
30-34	1233	419	717	97	102	2568	432.4	27.4	2.1	1.5	5.7	91.3	2.0
35-39	339	148	222	35	23	767	416.0	31.3	2.7	1.9	7.0	88.2	2.5
40-44	73	37	43	4	8	165	439.7	41.6	3.5	1.4	9.7	103.9	3.1
45-49	5	5	3	1	0	14	385.5	111.4	4.8	6.8	16.4	172.8	5.0
UNKNOWN[2]	14	7	9	1	37	68							
TOTAL	8877	3113	4557	551	677	17775	444.9	27.6	2.0	1.7	6.3	90.3	2.0

Table 2. Infant Mortality, by Birthweight, Age at Death, Race, and Maternal Age: Singleton Infants, 1980 Birth Cohort, United States — Continued

	BIRTHWEIGHT (GRAMS)													
	NUMBER OF DEATHS						MORTALITY RISK[1]							
	<1500	1500-2499	2500-3999	>=4000	UNKNOWN	TOTAL	<1500	1500-2499	2500-3999	>=4000	TOTAL	<2500	>=2500
.1 NEONATAL DEATHS, SINGLETON INFANTS													
B. BLACKS													
CATEGORY :													
10-14	96	14	17	0	4	131	460.9	19.8	3.9	0.0	23.0	119.3	3.8
10	0	0	0	0	0	0	.	.	.	.	.	.	.
11	0	0	0	0	0	0	0.0	0.0	0.0	.	0.0	0.0	0.0
12	3	1	0	0	0	6	583.2	31.3	0.0	0.0	35.5	143.6	0.0
13	18	3	1	0	0	22	603.1	24.1	1.2	0.0	21.4	136.9	1.1
14	75	10	16	0	4	105	438.9	18.4	4.6	0.0	23.0	115.5	4.5
15-19	1290	231	317	18	60	1916	390.1	15.2	2.6	4.4	13.0	82.1	2.7
15-17	640	107	139	6	28	920	408.3	15.4	2.6	3.7	14.2	87.7	2.7
15	143	24	30	1	10	208	435.7	17.5	3.1	3.4	16.8	100.0	3.1
16	202	27	51	2	8	291	387.7	12.0	2.9	4.0	13.3	81.3	2.9
17	295	56	57	3	10	421	413.2	16.9	2.3	3.6	13.8	87.0	2.3
18-19	650	124	178	12	32	996	373.6	15.1	2.6	4.9	12.1	77.3	2.7
18	306	56	86	6	17	471	356.6	14.2	2.7	5.5	12.3	74.8	2.8
19	344	68	92	6	15	525	390.2	15.9	2.5	4.4	12.0	79.8	2.6
20-24	1468	286	406	34	105	2479	417.8	14.6	2.5	4.0	12.2	87.5	2.6
25-29	993	174	284	20	39	1530	408.9	17.4	2.7	2.4	11.7	94.3	2.7
30-34	478	92	158	22	39	789	419.0	20.2	3.3	4.1	13.8	99.5	3.4
35-39	155	39	66	8	6	274	408.9	25.8	4.5	4.3	14.6	102.1	4.5
40-44	24	8	14	3	7	56	327.0	26.7	5.5	8.1	14.6	83.9	5.9
45-49	0	3	1	0	0	4	0.0	100.6	6.7	0.0	20.0	96.3	5.9
UNKNOWN[2]	6	0	1	0	29	36							
TOTAL	4710	827	1264	103	309	7215	407.9	16.4	2.8	3.7	12.6	89.3	2.8
.2 POSTNEONATAL DEATHS, SINGLETON INFANTS													
A. ALL RACES													
CATEGORY :													
10-14	16	19	57	3	0	95	96.7	18.3	6.9	8.5	9.8	29.0	7.0
10	0	0	0	0	0	0	.	.	0.0	.	0.0	.	0.0
11	0	0	0	0	0	0	0.0	0.0	0.0	.	0.0	0.0	0.0
12	1	0	1	0	0	2	201.6	0.0	3.6	0.0	8.9	26.3	3.3
13	2	3	10	0	0	15	134.5	19.3	6.9	0.0	9.2	29.5	6.6
14	13	16	46	3	0	78	89.3	18.9	7.0	10.1	10.0	29.2	7.2
15-19	333	590	2304	134	22	3383	74.0	15.5	5.0	3.8	6.3	21.7	4.9
15-17	142	238	896	48	13	1337	74.2	15.5	5.5	4.4	6.9	22.1	5.4
15	26	44	135	7	1	213	75.1	17.9	5.8	5.6	7.8	25.1	5.8
16	42	80	294	21	5	442	64.9	16.4	5.7	6.7	7.3	21.9	5.8
17	74	114	467	20	7	682	80.1	14.2	5.2	2.9	6.5	21.2	5.1
18-19	191	352	1408	86	9	2046	74.0	15.5	4.8	3.5	5.9	21.5	4.7
18	111	174	660	34	4	983	85.3	16.9	5.2	3.5	6.6	24.5	5.1
19	80	178	748	52	5	1063	62.6	14.4	4.5	3.5	5.4	19.0	4.4
20-24	419	792	3276	248	25	4760	66.6	13.5	3.2	2.1	4.0	18.4	3.1
25-29	305	451	1942	199	17	2914	65.7	10.6	2.2	1.5	2.7	16.0	2.1
30-34	147	178	800	117	12	1254	58.6	8.6	1.9	1.5	2.4	13.9	1.8
35-39	46	84	223	33	2	388	60.3	9.8	2.1	1.6	2.7	15.0	2.0
40-44	9	29	57	6	0	101	60.0	22.2	3.3	1.7	4.6	26.1	3.0
45-49	0	0	6	0	0	6	0.0	0.0	0.0	0.0	5.3	0.0	5.7
UNKNOWN[2]	0	2	4	1	64	71							
TOTAL	1275	2125	8869	741	142	12952	67.0	12.5	3.0	1.9	3.7	18.0	2.8

Table 2. Infant Mortality, by Birthweight, Age at Death, Race, and Maternal Age: Singleton Infants, 1980 Birth Cohort, United States — Continued

	BIRTHWEIGHT (GRAMS)											
	NUMBER OF DEATHS						MORTALITY RISK[1]					
	<1500	1500-2499	2500-3999	>=4000	UNKNOWN	TOTAL	<1500	1500-2499	2500-3999	>=4000	TOTAL	<2500	>=2500
.2 POSTNEONATAL DEATHS, SINGLETON INFANTS (CONTINUED)													
W. WHITES													
CATEGORY :													
10-14	8	5	14	1	0	28	0.0	16.0	4.2	4.3	5.1	13.9	4.2
10	0	0	0	0	0	0	.	.	0.0	.	0.0	.	0.0
11	0	0	0	0	0	0	.	.	0.0	.	0.0	.	0.0
12	0	0	0	0	0	0	.	0.0	0.0	0.0	0.0	0.0	0.0
13	0	1	1	0	0	2	0.0	29.0	2.3	0.0	4.1	28.2	2.2
14	0	4	13	1	0	18	0.0	14.4	4.6	4.9	5.4	12.4	4.6
15-19	159	328	1467	105	11	2070	67.8	14.9	4.5	3.5	5.5	20.1	4.4
15-17	69	115	520	38	5	747	73.8	14.3	4.9	4.2	6.0	20.6	4.8
15	9	18	54	4	1	86	63.3	17.7	4.3	4.4	5.9	23.2	4.3
16	18	36	153	17	1	225	58.6	44.2	4.7	6.6	5.9	19.0	4.9
17	42	61	313	17	3	436	86.5	13.5	3.1	2.8	6.0	20.9	4.9
18-19	90	213	947	67	6	1323	63.6	15.3	4.4	3.2	5.2	19.8	4.3
18	46	102	434	27	1	610	63.3	16.7	4.7	3.2	5.7	21.4	4.6
19	44	111	513	40	5	713	63.9	14.2	4.1	3.2	4.8	18.4	4.0
20-24	237	497	2327	208	16	3285	63.4	12.7	2.9	2.0	3.4	17.0	2.8
25-29	170	283	1443	159	12	2067	55.8	9.2	1.9	1.3	2.3	13.3	1.9
30-34	88	121	588	103	8	910	52.5	8.1	1.6	1.3	2.0	12.5	1.6
35-39	30	39	137	28	0	234	59.8	8.3	1.8	1.6	2.3	13.1	1.8
40-44	7	23	40	5	0	75	78.7	25.6	3.0	1.7	4.4	30.4	2.8
45-49	0	0	4	0	0	4	0.0	0.0	6.2	0.0	4.8	0.0	5.0
UNKNOWN[2]	0	3	4	1	11	18							
TOTAL	691	1298	6044	612	58	8703	60.3	11.4	2.6	1.8	3.1	15.9	2.5
B. BLACKS													
CATEGORY :													
10-14	16	14	42	2	0	74	138.9	19.3	9.1	18.5	13.3	36.0	9.3
10	0	0	0	0	0	0	.	.	.	.	.	.	.
11	0	0	0	0	0	0	0.0	0.0	0.0	.	0.0	0.0	0.0
12	1	0	1	0	0	2	201.3	0.0	8.0	0.0	12.2	27.8	7.8
13	3	2	8	0	0	12	167.6	16.5	9.3	0.0	11.8	30.0	9.1
14	13	12	33	2	0	60	135.1	21.4	9.2	23.2	13.8	38.1	9.5
15-19	168	246	761	24	8	1207	80.5	15.9	6.2	5.5	8.3	23.5	6.2
15-17	70	121	351	8	6	556	73.1	17.0	6.5	4.8	8.6	25.7	6.5
15	17	26	78	2	0	123	84.1	18.3	7.6	6.4	10.1	26.8	7.6
16	22	44	133	4	3	206	65.9	18.9	7.4	7.8	9.5	24.7	7.4
17	31	51	140	2	3	227	73.4	15.0	5.5	2.4	7.4	21.6	5.4
18-19	98	125	410	16	2	651	86.8	14.9	5.9	5.9	8.0	23.4	5.9
18	64	65	199	6	2	336	113.0	16.1	6.2	5.3	8.9	28.0	6.2
19	34	60	211	10	0	315	59.7	13.8	5.7	6.4	7.2	19.0	5.7
20-24	173	260	822	32	8	1295	70.3	13.9	4.8	3.5	6.4	20.4	4.8
25-29	127	151	388	33	2	701	85.7	14.8	3.6	3.8	5.4	23.8	3.6
30-34	51	48	161	6	0	266	73.1	10.1	3.2	1.1	4.3	18.2	3.0
35-39	14	20	52	3	1	90	62.0	13.4	3.5	1.6	4.8	19.7	3.3
40-44	2	5	11	1	0	19	36.1	14.7	3.7	2.3	5.0	17.7	3.5
45-49	0	0	2	0	1	3	0.0	0.0	20.2	0.0	15.3	0.0	17.9
UNKNOWN[2]	0	0	0	0	10	10							
TOTAL	531	744	2239	101	30	3645	77.3	14.4	4.7	3.4	6.4	22.0	4.6

Table 2. Infant Mortality, by Birthweight, Age at Death, Race, and Maternal Age: Singleton Infants, 1980 Birth Cohort, United States — Continued

	BIRTHWEIGHT (GRAMS)												
	NUMBER OF DEATHS						MORTALITY RISK[1]						
	<1500	1500-2499	2500-3999	>=4000	UNKNOWN	TOTAL	<1500	1500-2499	2500-3999	>=4000	TOTAL	<2500	>=2500
.3 INFANT DEATHS, SINGLETON INFANTS													
A. ALL RACES													
CATEGORY :													
10-14	167	51	86	3	7	314	531.2	47.6	10.6	8.5	31.5	157.6	10.6
10	0	0	0	0	0	0	.	.	0.0	.	0.0	.	0.0
11	0	0	0	0	0	0	0.0	0.0	0.0	.	0.0	0.0	0.0
12	9	1	1	0	0	11	695.3	29.6	5.6	0.0	47.0	213.7	5.3
13	28	7	14	0	0	49	712.5	43.6	9.9	0.0	30.2	170.7	9.5
14	130	43	71	3	7	254	501.2	49.4	11.0	10.1	31.4	154.1	11.0
15-19	3519	1336	3270	221	190	8536	463.9	35.0	7.2	6.3	15.8	106.8	7.1
15-17	1541	512	1243	75	95	3466	469.4	33.1	7.6	7.0	17.8	110.7	7.6
15	306	90	190	11	17	614	492.1	35.8	8.2	8.9	22.1	128.8	8.3
16	505	161	419	30	35	1150	465.4	32.9	8.2	9.3	18.7	111.5	8.2
17	730	261	634	34	43	1702	463.2	32.4	7.2	5.3	16.2	104.3	7.1
18-19	1978	824	2027	146	95	5070	459.7	36.4	6.9	6.0	14.7	104.1	6.9
18	934	376	925	63	43	2341	448.7	36.5	7.3	6.5	15.7	105.6	7.2
19	1044	448	1102	83	52	2729	470.0	36.2	6.6	5.7	13.9	102.9	6.6
20-24	5035	2184	5235	464	366	13284	473.3	36.8	5.2	4.1	11.1	103.9	5.1
25-29	3922	1556	3714	396	281	9869	482.2	36.4	4.3	3.0	9.2	107.9	4.1
30-34	1950	719	1733	244	163	4809	461.5	34.1	4.1	3.3	9.0	105.7	4.0
35-39	563	267	527	79	36	1472	449.1	40.1	5.0	3.8	10.8	105.1	4.8
40-44	115	76	120	14	15	340	457.1	58.5	7.1	4.2	15.1	122.1	6.6
45-49	6	9	10	1	0	26	286.4	116.9	11.4	5.7	22.6	153.2	10.4
UNKNOWN[2]	23	9	14	2	187	237							
TOTAL	15302	6207	14709	1424	1245	38887	471.2	36.4	5.1	3.8	11.0	106.4	4.9
W. WHITES													
CATEGORY :													
10-14	53	22	24	1	3	103	529.0	65.7	7.3	4.3	25.0	172.7	7.1
10	0	0	0	0	0	0	.	.	0.0	.	0.0	.	0.0
11	0	0	0	0	0	0	.	.	0.0	.	0.0	.	0.0
12	3	0	0	0	0	3	1000	0.0	0.0	0.0	49.3	601.9	0.0
13	8	2	3	0	0	13	876.2	56.1	7.0	0.0	24.2	205.2	6.6
14	42	20	21	1	3	87	481.8	67.3	7.5	4.9	24.8	163.4	7.4
15-19	2001	829	2087	171	109	5197	482.6	37.7	6.5	5.7	13.6	108.8	6.4
15-17	805	278	717	58	56	1914	483.5	34.2	6.8	6.5	15.2	111.7	6.8
15	143	39	77	7	7	273	514.9	36.1	6.1	7.8	18.3	135.7	6.2
16	272	90	224	23	22	631	493.0	35.5	7.0	8.6	16.4	117.8	7.1
17	390	149	416	28	27	1010	466.5	32.9	6.8	5.2	13.9	101.9	6.7
18-19	1196	551	1370	113	53	3283	482.1	39.7	6.3	5.3	12.9	107.1	6.3
18	545	247	606	49	21	1468	481.7	40.4	6.6	5.8	13.6	108.6	6.5
19	651	304	764	64	32	1815	500.6	39.1	6.1	5.0	12.3	105.9	6.0
20-24	3052	1586	3828	381	230	9077	476.3	40.5	4.8	3.7	9.4	102.1	4.6
25-29	2673	1173	2875	333	204	7258	488.7	37.7	3.9	2.8	8.0	105.3	3.8
30-34	1321	540	1305	202	110	3478	462.2	35.2	3.7	3.0	7.8	102.6	3.6
35-39	369	187	379	63	23	1021	450.9	39.3	4.5	3.5	9.3	100.2	4.3
40-44	80	60	83	9	8	240	502.3	66.2	6.5	3.2	14.1	131.1	5.9
45-49	5	5	7	1	0	18	385.5	111.4	10.8	6.8	21.1	172.8	10.0
UNKNOWN[2]	14	9	13	2	48	86							
TOTAL	9568	4411	10601	1163	735	26478	478.4	38.7	4.6	3.4	9.3	104.8	4.4

Table 2. Infant Mortality, by Birthweight, Age at Death, Race, and Maternal Age: Singleton Infants, 1980 Birth Cohort, United States — Continued

TABLE 2. INFANT MORTALITY BY BIRTHWEIGHT, AGE AT DEATH, RACE AND MATERNAL AGE
SINGLETON INFANTS, 1980 BIRTH COHORT, UNITED STATES

	BIRTHWEIGHT (GRAMS)											
	NUMBER OF DEATHS						MORTALITY RISK[1]					
	<1500	1500-2499	2500-3999	>=4000	UNKNOWN	TOTAL	<1500	1500-2499	2500-3999	>=4000	TOTAL	<2500	>=2500
.3 INFANT DEATHS, SINGLETON INFANTS (CONTINUED)													
B. BLACKS													
CATEGORY :													
10-14	112	28	59	2	4	205	535.8	38.9	12.9	18.5	36.0	151.0	13.1
10	0	0	0	0	0	0	.	.	.	.	.	.	.
11	0	0	0	0	0	0	0.0	0.0	0.0	.	0.0	0.0	0.0
12	6	1	1	0	0	8	603.2	31.3	8.0	0.0	47.2	167.4	7.8
13	20	5	9	0	0	34	649.6	48.2	10.4	0.0	32.9	162.8	10.2
14	86	22	49	2	4	163	514.7	39.4	13.8	23.2	36.5	149.2	14.0
15-19	1458	477	1078	42	68	3123	439.2	30.8	8.8	9.9	21.2	103.7	8.8
15-17	710	228	490	14	34	1476	451.7	32.1	9.1	8.4	22.7	109.3	9.1
15	160	50	108	3	10	331	474.0	35.5	10.7	9.7	26.7	124.1	10.7
16	224	71	185	6	11	497	428.1	30.7	10.2	11.7	22.7	104.1	10.3
17	326	107	197	5	13	648	458.1	31.7	7.7	6.0	21.1	106.7	7.7
18-19	748	249	588	28	34	1647	428.0	29.8	8.5	10.8	20.0	98.9	8.6
18	370	121	285	12	19	807	429.3	30.1	8.9	10.8	21.0	100.7	9.0
19	378	128	303	16	15	840	426.6	29.5	8.2	10.8	19.1	97.2	8.2
20-24	1841	526	1228	66	113	3774	458.8	28.4	7.3	7.6	18.5	106.2	7.3
25-29	1120	325	672	53	61	2231	459.6	31.9	6.2	6.2	17.0	115.9	6.2
30-34	529	140	319	28	39	1055	461.4	30.1	6.5	5.2	17.1	115.9	6.4
35-39	169	59	118	11	7	364	445.6	38.8	8.0	6.0	19.3	119.8	7.8
40-44	26	13	25	4	7	75	351.3	41.0	9.2	10.4	19.6	100.1	9.4
45-49	0	3	3	0	1	7	0.0	106.6	26.7	0.0	35.0	96.3	23.7
UNKNOWN[2]	6	0	1	0	39	46							
TOTAL	5261	1571	3503	206	339	10880	453.7	30.6	7.5	7.0	18.9	109.3	7.4

NOTE: For definitions and symbols used in this table, see Notes for Tables, preceding Table 1D.1A.

[1]Mortality risk includes 48 States. For exclusion criteria see Appendix III.B.

[2]In this and all subsequent tables, the unknown category includes total number of deaths for all States that could not provide detailed data for a given variable. See Notes for Tables.

Table 3. Infant Mortality, by Birthweight, Age at Death, Race, and Number of Previous Live Births: Singleton Infants, 1980 Birth Cohort, United States

	BIRTHWEIGHT (GRAMS)												
	NUMBER OF DEATHS						MORTALITY RISK[1]						
	<1500	1500-2499	2500-3999	>=4000	UNKNOWN	TOTAL	<1500	1500-2499	2500-3999	>=4000	TOTAL	<2500	>=2500
.1 NEONATAL DEATHS, SINGLETON INFANTS													
A. ALL RACES													
CATEGORY[2]:													
0	6732	1737	2604	261	396	11750	429.0	21.8	2.2	2.1	7.9	88.8	2.2
1	3873	1228	1644	175	248	7168	447.0	27.1	1.9	1.4	6.6	93.8	1.8
2	1695	523	904	124	136	3372	429.3	24.1	2.3	1.9	6.7	85.6	2.2
3	667	253	345	48	59	1372	413.4	28.2	2.4	1.9	7.3	87.0	2.3
4	309	116	184	24	19	652	423.4	29.8	3.4	2.3	8.9	91.6	3.2
5-15	297	112	166	32	23	630	420.3	31.5	3.4	2.8	9.3	94.7	3.3
UNKNOWN	444	113	193	19	222	991							
TOTAL	14027	4082	6040	683	1103	25935	432.9	24.4	2.2	1.8	7.3	89.9	2.1
W. WHITES													
CATEGORY[2]:													
0	4482	1384	2007	219	261	8353	431.7	24.6	2.0	1.9	6.8	87.5	2.0
1	2448	960	1289	146	179	5022	458.4	31.2	1.8	1.3	5.6	94.0	1.7
2	1046	380	690	101	93	2310	453.9	27.9	2.2	1.7	5.7	89.1	2.1
3	376	176	234	36	35	857	434.6	33.1	2.2	1.6	6.1	89.8	2.1
4	170	80	120	15	12	397	485.5	36.8	3.1	1.7	7.5	99.4	2.8
5-15	138	69	106	19	16	368	463.3	37.7	3.2	2.1	7.9	104.7	3.0
UNKNOWN	197	64	111	15	81	468							
TOTAL	8877	3113	4557	551	677	17775	443.2	27.7	2.0	1.6	6.2	90.1	2.0
B. BLACKS													
CATEGORY[2]:													
0	2117	383	584	33	115	3072	419.8	14.6	2.9	4.3	13.9	93.4	3.0
1	1279	229	309	25	57	1899	411.4	17.6	2.5	3.1	12.0	91.3	2.5
2	572	126	173	20	39	930	381.6	17.3	2.6	3.6	10.7	77.7	2.7
3	263	62	100	8	21	456	382.9	18.5	3.3	3.0	11.2	80.0	3.2
4	133	27	55	9	6	230	377.2	17.9	4.1	6.5	13.3	83.1	4.3
5-15	122	34	53	8	5	232	360.2	22.8	3.9	4.2	13.4	80.5	4.0
UNKNOWN	222	46	70	2	66	406							
TOTAL	4710	827	1264	105	309	7215	406.7	16.3	2.8	3.8	12.8	88.7	2.9
.2 POSTNEONATAL DEATHS, SINGLETON INFANTS													
A. ALL RACES													
CATEGORY[2]:													
0	554	812	3028	216	39	4649	80.2	10.1	2.4	1.7	3.1	15.3	2.4
1	373	643	2856	231	19	4122	77.5	14.2	3.2	1.9	3.8	20.4	3.0
2	171	321	1434	163	7	2096	74.4	14.2	3.5	2.3	4.1	19.9	3.3
3	76	142	603	52	4	877	78.1	15.6	4.0	1.9	4.7	21.8	3.7
4	28	75	248	32	0	383	63.0	19.0	4.4	2.9	5.3	23.4	4.1
5-15	29	63	246	26	1	365	69.6	17.0	4.7	2.4	5.4	22.5	4.3
UNKNOWN	44	69	254	21	72	460							
TOTAL	1275	2125	8669	741	142	12952	67.9	12.3	3.0	1.9	3.7	18.0	2.9
W. WHITES													
CATEGORY[2]:													
0	301	539	2265	190	22	3317	49.9	9.4	2.2	1.6	2.7	13.3	2.1
1	226	415	2052	191	13	2897	77.5	13.5	2.8	1.6	3.2	19.2	2.6
2	98	181	973	132	5	1389	75.7	12.9	3.0	2.1	3.5	18.3	2.9
3	35	68	375	42	3	523	69.6	13.3	3.4	1.8	3.7	18.3	3.1
4	8	40	138	27	0	213	43.4	18.6	3.4	3.0	4.1	20.7	3.3
5-15	9	32	127	21	0	189	48.3	17.8	3.7	2.3	4.1	20.7	3.4
UNKNOWN	14	23	114	9	15	175							
TOTAL	691	1298	6044	612	58	8703	61.0	11.5	2.6	1.8	3.1	16.8	2.5

Table 3. Infant Mortality, by Birthweight, Age at Death, Race, and Number of Previous Live Births: Singleton Infants, 1980 Birth Cohort, United States — Continued

	BIRTHWEIGHT (GRAMS)											
	NUMBER OF DEATHS						MORTALITY RISK[1]					
	<1500	1500-2499	2500-3999	>=4000	UNKNOWN	TOTAL	<1500	1500-2499	2500-3999	>=4000	TOTAL	<2500	>=2500
.2 POSTNEONATAL DEATHS, SINGLETON INFANTS (CONTINUED)													
B. BLACKS													
CATEGORY[2]:													
0	236	241	653	23	13	1168	78.4	11.7	3.6	3.0	5.4	20.0	3.6
1	137	201	678	32	3	1051	74.9	15.2	5.1	4.2	6.7	22.4	5.0
2	69	127	392	21	1	610	72.4	16.3	5.3	4.1	7.0	22.5	5.2
3	41	70	193	8	1	313	93.3	19.3	5.7	2.9	7.6	27.7	5.5
4	20	34	100	5	0	159	83.1	20.8	7.1	2.9	9.0	28.5	6.7
5-15	19	27	97	4	0	147	87.9	15.2	6.7	2.4	8.0	23.9	6.2
UNKNOWN	29	44	124	8	12	217							
TOTAL	531	744	2239	101	30	3663	78.0	14.3	4.7	3.5	6.4	22.0	4.6
.3 INFANT DEATHS, SINGLETON INFANTS													
A. ALL RACES													
CATEGORY[2]:													
0	7306	2549	5632	477	435	16399	463.4	31.7	4.6	3.8	11.0	102.7	4.5
1	4246	1871	4500	406	267	11290	489.9	41.0	5.1	3.3	10.4	112.3	4.8
2	1836	844	2338	287	143	5468	471.8	38.0	5.8	4.2	10.8	103.8	5.6
3	743	393	948	100	63	2249	459.2	43.4	6.4	3.8	11.9	106.9	6.0
4	337	191	432	56	19	1035	459.8	48.3	7.8	5.1	14.2	112.9	7.3
5-15	326	173	412	38	24	995	460.6	48.0	8.1	5.2	14.6	115.1	7.5
UNKNOWN	488	182	447	40	294	1451							
TOTAL	15302	6207	14709	1424	1245	38887	471.4	36.5	5.1	3.8	11.0	106.2	5.0
W. WHITES													
CATEGORY[2]:													
0	4783	1923	4272	409	283	11670	460.0	33.7	4.2	3.5	9.5	99.6	4.1
1	2674	1373	3341	337	192	7919	500.4	44.3	4.6	3.0	8.8	111.3	4.3
2	1144	561	1663	233	98	3699	495.3	40.4	5.2	3.8	9.2	105.7	5.0
3	411	244	609	78	38	1380	473.9	46.0	5.6	3.4	9.8	106.4	5.2
4	178	120	258	42	12	610	508.9	54.8	6.5	4.7	11.6	118.0	6.2
5-15	167	101	233	40	16	557	489.3	54.9	6.8	4.4	12.1	123.2	6.9
UNKNOWN	211	87	225	24	96	643							
TOTAL	9568	4411	10601	1163	735	26478	477.2	38.9	4.6	3.4	9.3	104.7	4.5
B. BLACKS													
CATEGORY[2]:													
0	2353	544	1159	56	128	4240	463.2	26.0	6.5	7.3	19.2	111.5	6.5
1	1416	430	987	57	60	2950	455.5	32.5	7.3	7.2	18.7	111.7	7.5
2	641	253	565	41	40	1540	426.4	33.3	7.9	7.6	17.5	98.5	7.9
3	306	132	293	16	22	769	440.4	37.4	8.9	5.8	18.8	105.5	8.6
4	153	61	155	14	6	389	429.0	38.3	11.2	9.4	22.2	109.2	11.0
5-15	141	61	150	12	5	369	416.5	37.6	10.6	6.6	20.3	102.4	10.1
UNKNOWN	251	90	194	10	78	623							
TOTAL	5261	1571	3503	206	339	10880	453.0	30.6	7.5	7.3	18.9	108.8	7.5

NOTE: For definitions and symbols used in this table, see Notes for Tables, preceding Table 1D.1A.

[1]Mortality risk includes 47 States. For exclusion criteria see Appendix III.B.

[2]Blank values for mortality data were classified as '0' by four States. See Appendix II.

Table 7. Infant Mortality, by Birthweight, Age at Death, Race, and Gestational Age at Birth[1]: Singleton Infants, 1980 Birth Cohort, United States

	BIRTHWEIGHT (GRAMS)													
	NUMBER OF DEATHS						MORTALITY RISK[2]							
	<1500	1500-2499	2500-3999	>=4000	UNKNOWN	TOTAL	<1500	1500-2499	2500-3999	>=4000	TOTAL	<2500	>=2500
.1 NEONATAL DEATHS, SINGLETON INFANTS													
A. ALL RACES													
CATEGORY :													
17-27	7067	110	49	42	309	7577	666.3	65.0	16.0	135.3	476.7	591.3	24.9
17-19	353	6	7	3	37	406	832.3	64.1	19.2	111.4	451.2	718.4	26.7
20-25	4781	46	23	31	211	5092	787.4	62.4	16.1	192.8	596.2	716.5	30.7
26-27	1933	58	19	8	61	2079	462.7	67.4	15.0	59.8	318.4	399.3	17.8
28-31	2119	512	68	9	77	2785	243.4	54.4	8.4	18.0	102.8	146.7	8.9
28-29	1346	154	20	5	36	1561	282.9	65.3	9.0	23.3	162.3	215.0	9.8
30-31	773	358	48	4	41	1224	195.5	51.0	8.2	15.4	69.9	103.3	8.5
32-35	728	1125	385	16	80	2334	214.6	26.7	5.8	5.6	19.8	41.4	5.8
32-33	451	522	84	3	29	1089	209.3	33.0	5.9	3.4	32.9	55.0	5.8
34-35	277	603	301	13	51	1245	224.2	22.9	5.8	6.3	14.5	32.2	5.8
36	93	295	241	17	18	664	223.0	19.7	3.9	6.7	8.1	25.7	4.0
37-39	245	714	1667	111	94	2831	257.5	15.6	1.8	1.7	2.7	21.0	1.8
37	84	274	359	24	26	767	248.4	18.1	2.9	4.5	5.2	23.5	3.0
38-39	161	440	1308	87	68	2064	262.4	14.4	1.7	1.5	2.3	19.8	1.8
40	89	244	940	111	37	1421	315.7	20.8	1.7	1.5	2.1	28.3	1.6
41	64	139	678	107	39	1027	304.8	22.0	1.8	1.5	2.2	31.7	1.8
42-45	79	194	978	137	52	1440	251.1	25.9	2.8	1.8	3.2	34.5	2.6
42	39	87	481	66	19	692	284.1	24.0	2.6	1.4	2.9	33.1	2.4
43-45	40	107	497	71	33	748	225.7	27.7	3.1	2.3	3.7	35.9	3.0
UNKNOWN	3543	749	1034	133	397	5856							
TOTAL	14027	4082	6040	683	1103	25935	429.0	24.0	2.2	1.8	7.4	89.7	2.1
W. WHITES													
CATEGORY :													
17-27	4457	73	24	30	201	4785	685.9	87.6	13.8	131.0	500.5	622.0	25.5
17-19	180	3	5	3	24	213	901.7	89.8	10.7	158.5	432.4	786.8	24.7
20-25	2959	30	9	21	130	3149	822.0	80.6	11.7	168.0	628.5	740.5	28.6
26-27	1318	40	12	6	47	1423	481.7	93.8	17.1	73.4	348.1	429.4	22.3
28-31	1460	391	47	8	53	1959	259.3	67.1	10.0	21.2	116.5	162.4	10.7
28-29	918	118	13	4	25	1078	297.2	90.6	10.5	22.0	183.4	239.0	11.3
30-31	542	273	34	4	28	881	212.8	60.8	9.8	20.8	80.4	115.5	10.5
32-35	513	867	301	12	59	1752	239.8	30.2	6.9	5.5	22.2	45.2	6.8
32-33	320	397	56	2	22	797	232.4	37.0	6.4	2.4	36.9	59.6	6.2
34-35	193	470	245	10	37	955	253.2	26.0	7.0	6.3	16.5	35.7	6.9
36	63	228	189	15	14	509	230.3	22.3	4.2	7.3	8.5	28.3	4.3
37-39	173	561	1250	84	63	2131	270.0	18.2	1.7	1.5	2.6	23.8	1.7
37	56	217	262	17	17	569	258.8	21.3	2.9	3.8	5.2	26.7	2.9
38-39	117	344	988	67	46	1562	275.9	16.7	1.6	1.3	2.2	22.3	1.5
40	58	193	717	91	28	1087	312.7	22.9	1.5	1.3	1.9	29.5	1.5
41	49	106	530	88	25	798	358.9	24.1	1.7	1.3	2.0	34.6	1.6

Table 7. Infant Mortality, by Birthweight, Age at Death, Race, and Gestational Age at Birth[1]: Singleton Infants, 1980 Birth Cohort, United States — Continued

	BIRTHWEIGHT (GRAMS)												
	NUMBER OF DEATHS						MORTALITY RISK[2]						
	<1500	1500-2499	2500-3999	>=4000	UNKNOWN	TOTAL	<1500	1500-2499	2500-3999	>=4000	TOTAL	<2500	>=2500
.1 NEONATAL DEATHS, SINGLETON INFANTS (CONTINUED)													
W. WHITES (CONTINUED)													
CATEGORY :													
42-43	54	153	755	115	38	1115	240.3	30.0	2.6	1.6	2.9	37.7	2.4
42	26	59	376	58	13	542	257.0	27.1	2.4	1.3	2.6	34.9	2.2
43-45	28	84	379	57	25	573	226.4	32.7	2.8	2.0	3.3	40.3	2.7
UNKNOWN	2050	541	744	108	196	3639							
TOTAL	8877	3113	4557	551	677	17775	448.4	27.4	2.0	1.6	6.2	90.0	2.0
B. BLACKS													
CATEGORY :													
17-27	2421	31	23	10	92	2577	625.5	36.1	17.8	110.2	429.5	534.6	21.3
17-19	168	2	4	0	11	185	761.9	22.5	33.3	0.0	466.1	649.3	31.2
20-25	1689	14	12	8	71	1794	723.5	41.3	19.3	192.9	535.3	640.9	27.3
26-27	564	15	7	2	10	598	420.4	32.8	12.8	0.0	261.4	339.2	12.4
28-31	583	108	20	1	22	734	208.3	32.5	6.4	11.2	77.6	115.6	6.5
28-29	377	34	7	1	10	429	250.0	34.3	7.5	28.7	124.2	170.0	8.3
30-31	206	74	13	0	12	305	159.7	31.8	5.9	0.0	50.5	78.7	5.8
32-35	186	227	74	4	15	506	159.2	18.8	3.7	7.0	14.4	31.7	3.8
32-33	112	108	23	1	4	248	156.9	23.1	4.6	7.0	23.6	42.5	4.7
34-35	74	119	51	3	11	258	163.2	16.1	3.4	7.0	10.3	24.2	3.5
36	27	55	40	1	4	127	211.4	13.4	2.8	2.1	6.4	19.7	2.7
37-39	60	128	362	22	29	601	214.0	10.0	2.3	3.2	3.3	14.6	2.3
37	24	48	83	4	7	166	207.3	11.1	3.0	4.9	4.9	16.2	3.1
38-39	36	80	279	18	22	435	218.1	9.4	2.1	3.0	2.9	13.8	2.2
40	26	44	187	16	6	281	305.6	15.4	2.5	3.3	3.4	24.7	2.6
41	13	29	120	9	11	182	192.8	17.4	2.8	1.7	3.5	24.3	2.7
42-45	24	30	196	21	11	282	286.0	14.6	4.1	4.2	5.0	25.6	4.1
42	12	12	88	9	5	126	348.5	12.9	3.8	3.4	4.5	25.0	3.7
43-45	12	18	108	12	6	156	244.6	15.9	4.5	5.1	5.5	26.1	4.5
UNKNOWN	1370	175	242	19	119	1925							
TOTAL	4710	827	1264	105	309	7215	402.7	16.2	2.8	3.5	12.6	88.5	2.9
.2 POSTNEONATAL DEATHS, SINGLETON INFANTS													
A. ALL RACES													
CATEGORY :													
17-27	449	41	33	4	8	535	120.4	27.5	9.7	14.0	62.2	93.8	10.0
17-19	6	3	1	0	1	11	84.0	41.3	3.2	0.0	21.9	62.9	3.0
20-25	207	20	17	0	4	248	134.3	31.1	9.4	0.0	70.0	114.4	8.7
26-27	236	18	15	4	3	276	101.2	22.9	11.8	36.0	60.8	81.7	13.3
28-31	352	176	65	2	5	600	52.9	19.9	7.4	5.0	24.7	34.2	7.3
28-29	197	43	23	1	4	268	57.0	20.1	9.0	7.7	32.9	43.3	8.9
30-31	155	133	42	1	1	332	48.4	19.9	6.8	3.6	20.7	29.1	6.6
32-35	105	498	365	12	8	988	38.6	12.1	5.5	4.2	8.7	13.8	5.4
32-33	72	212	92	2	4	382	41.7	14.1	6.5	3.2	12.1	17.0	6.4
34-35	33	286	273	10	4	606	33.0	11.0	5.2	4.5	7.3	11.8	5.1

Table 7. Infant Mortality, by Birthweight, Age at Death, Race, and Gestational Age at Birth[1]: Singleton Infants, 1980 Birth Cohort, United States — Continued

	BIRTHWEIGHT (GRAMS)												
	NUMBER OF DEATHS						MORTALITY RISK[2]						
	<1500	1500-2499	2500-3999	>=4000	UNKNOWN	TOTAL	<1500	1500-2499	2500-3999	>=4000	TOTAL	<2500	>=2500
.2 POSTNEONATAL DEATHS, SINGLETON INFANTS (CONTINUED)													
A. ALL RACES (CONTINUED)													
CATEGORY :													
36	12	159	298	13	2	484	35.0	11.1	4.6	4.5	5.9	11.7	4.6
37-39	40	497	2691	160	17	3405	48.1	10.7	2.9	2.4	3.3	11.3	2.9
37	11	151	515	20	7	704	41.2	10.0	4.1	3.5	4.8	10.6	4.1
38-39	29	346	2176	140	10	2701	51.8	11.0	2.7	2.3	3.0	11.7	2.7
40	11	150	1649	157	7	1974	54.6	13.1	2.9	2.0	3.0	13.9	2.8
41	7	85	974	110	1	1177	42.1	12.9	2.5	1.4	2.5	13.6	2.3
42-45	13	115	1091	158	5	1382	64.9	14.9	3.0	2.0	3.1	16.4	2.8
42	7	56	528	89	1	681	83.8	15.6	2.7	1.9	2.7	17.3	2.5
43-45	6	59	563	69	4	701	51.4	14.3	3.4	2.1	3.5	15.5	3.2
UNKNOWN	286	404	1503	125	89	2407							
TOTAL	1275	2125	8669	741	142	12952	67.2	12.5	3.0	2.0	3.7	18.1	2.9
W. WHITES													
CATEGORY :													
17-27	233	21	19	3	5	281	108.8	29.6	9.5	12.0	37.1	88.4	9.7
17-19	2	1	1	0	1	5	113.0	35.8	5.8	0.0	17.6	66.3	5.3
20-25	86	10	9	0	2	107	123.7	32.9	7.6	0.0	34.0	96.1	6.9
26-27	145	10	9	3	2	169	100.8	26.4	12.7	29.7	63.7	84.9	14.2
28-31	196	107	32	1	3	339	47.1	19.1	6.4	3.5	22.9	31.4	6.3
28-29	112	23	11	1	3	150	52.0	19.2	8.0	10.9	31.3	41.0	8.2
30-31	84	84	21	0	0	189	41.7	19.1	5.8	0.0	18.8	26.3	5.5
32-35	59	293	202	10	4	568	34.9	10.3	4.6	4.7	7.4	11.7	4.6
32-33	38	120	44	1	3	206	35.2	11.6	3.2	2.2	10.0	13.9	3.0
34-35	21	173	158	9	1	362	34.2	9.5	4.4	5.3	6.4	10.3	4.4
36	8	107	202	12	1	330	35.5	11.0	4.2	5.0	5.3	11.6	4.3
37-39	28	314	1878	125	13	2358	50.1	9.8	2.6	2.1	2.8	10.4	2.5
37	9	94	341	15	4	463	53.1	9.0	3.6	3.2	4.1	9.8	3.6
38-39	19	220	1537	110	9	1895	48.6	10.1	2.4	2.1	2.6	10.8	2.4
40	6	95	1201	132	6	1440	44.4	11.6	2.5	1.8	2.6	12.1	2.4
41	4	52	736	92	1	885	48.7	11.0	2.2	1.3	2.1	11.8	2.0
42-45	9	86	803	133	2	1033	69.9	16.1	2.6	1.8	2.7	17.7	2.5
42	5	39	396	74	0	514	88.2	15.1	2.3	1.7	2.4	17.0	2.2
43-45	4	47	407	59	2	519	53.4	17.2	3.0	2.1	3.1	18.4	2.8
UNKNOWN	148	223	971	104	23	1469							
TOTAL	691	1298	6044	612	58	8703	59.9	11.4	2.6	1.8	3.1	15.9	2.5
B. BLACKS													
CATEGORY :													
17-27	203	19	14	1	3	240	128.4	24.8	10.6	21.9	65.7	95.3	11.0
17-19	3	2	0	0	0	5	48.9	44.8	0.0	0.0	21.8	47.2	0.0
20-25	112	10	8	0	2	132	164.5	30.4	12.2	0.0	81.6	121.2	11.7
26-27	88	7	6	1	1	103	102.6	17.1	11.2	72.0	56.1	76.4	12.7

Table 7. Infant Mortality, by Birthweight, Age at Death, Race, and Gestational Age at Birth[1]: Singleton Infants, 1980 Birth Cohort, United States — Continued

	BIRTHWEIGHT (GRAMS)												
	NUMBER OF DEATHS						MORTALITY RISK[2]						
	<1500	1500-2499	2500-3999	>=4000	UNKNOWN	TOTAL	<1500	1500-2499	2500-3999	>=4000	TOTAL	<2500	>=2500
.2 POSTNEONATAL DEATHS, SINGLETON INFANTS (CONTINUED)													
B. BLACKS (CONTINUED)													
CATEGORY :													
28-31	149	64	32	1	1	247	62.7	21.1	8.9	10.5	27.5	38.7	9.0
28-29	81	21	12	0	1	115	66.1	23.7	10.8	0.0	35.8	47.8	10.4
30-31	68	43	20	1	0	132	59.2	20.0	8.1	17.0	23.1	33.1	8.4
32-35	44	181	138	2	3	368	45.1	15.4	6.6	3.0	10.7	17.7	6.5
32-33	33	79	44	1	1	158	53.9	17.8	8.5	6.6	15.3	22.4	8.4
34-35	11	102	94	1	2	210	29.1	13.9	6.0	1.9	8.7	14.6	5.9
36	3	43	81	1	1	129	29.2	10.8	5.2	2.1	6.4	11.3	5.1
37-39	10	165	685	29	2	891	38.7	12.6	4.2	4.4	4.9	13.1	4.2
37	1	53	146	4	2	208	11.1	12.7	5.4	5.1	6.4	12.7	5.4
38-39	9	110	539	25	0	683	55.8	12.5	4.0	4.3	4.6	13.2	4.0
40	5	49	374	17	0	445	78.1	16.6	4.9	2.5	5.2	18.0	4.8
41	3	30	199	13	0	245	35.5	16.6	4.3	2.7	4.7	17.2	4.2
42-45	4	25	247	19	3	298	61.3	11.9	5.0	3.5	5.2	13.5	4.9
42	2	15	114	11	1	143	86.8	15.8	4.8	4.2	5.2	17.5	4.7
43-45	2	10	133	8	2	155	49.9	8.8	5.2	2.7	5.2	10.2	5.0
UNKNOWN	130	168	469	18	17	802							
TOTAL	351	744	2239	101	30	3665	77.3	14.6	4.7	3.4	6.5	22.3	4.6
.3 INFANT DEATHS, SINGLETON INFANTS													
A. ALL RACES													
CATEGORY :													
17-27	7516	191	82	46	317	8112	706.5	98.7	25.6	147.4	309.3	629.6	34.6
17-19	359	9	8	3	38	417	846.4	102.7	22.4	111.4	463.2	736.1	29.7
20-25	4988	66	40	31	215	5340	820.2	91.6	25.3	192.8	624.5	748.8	39.1
26-27	2169	76	34	12	64	2355	517.1	88.8	26.6	93.6	359.8	448.4	30.9
28-31	2471	688	133	11	82	3385	283.4	73.2	15.8	22.9	125.0	175.9	16.1
28-29	1343	197	43	6	40	1629	323.8	84.1	17.9	30.8	189.8	248.9	18.7
30-31	928	491	90	5	42	1556	234.5	69.8	14.9	19.0	89.1	129.4	15.1
32-35	833	1623	750	28	88	3322	244.9	38.6	11.2	9.8	28.3	54.6	11.2
32-33	523	734	176	5	33	1471	242.2	46.6	12.4	6.6	44.6	71.1	12.2
34-35	310	889	574	23	55	1851	249.8	33.6	10.9	10.7	21.7	43.6	10.9
36	105	434	539	30	20	1148	230.2	30.6	8.4	11.2	15.9	37.1	8.6
37-39	295	1211	4358	271	111	6236	293.2	26.2	4.8	4.1	6.0	32.1	4.7
37	95	425	874	44	33	1471	279.4	28.0	7.0	8.1	9.9	33.9	7.1
38-39	190	786	3484	227	78	4765	300.6	25.3	4.4	3.8	5.3	31.2	4.3
40	100	394	2589	268	44	3395	353.0	33.6	4.5	3.4	5.1	41.8	4.4
41	71	224	1652	217	40	2204	334.1	34.6	4.3	2.9	4.7	44.8	4.1
42-45	92	309	3069	295	57	3822	299.7	40.4	5.8	3.7	6.3	50.4	5.4
42	46	143	1009	155	20	1373	344.1	39.1	5.3	3.3	5.6	49.8	4.9
43-45	46	166	1060	140	37	1449	265.5	41.6	6.5	4.4	7.1	50.9	6.2
UNKNOWN	3829	1153	2537	236	486	8263							
TOTAL	15302	6207	14709	1424	1245	38887	467.4	36.2	5.2	3.8	11.1	106.2	5.0

Table 7. Infant Mortality, by Birthweight, Age at Death, Race, and Gestational Age at Birth[1]: Singleton Infants, 1980 Birth Cohort, United States — Continued

	BIRTHWEIGHT (GRAMS)											
	NUMBER OF DEATHS						MORTALITY RISK[2]					
	<1500	1500-2499	2500-3999	>=4000	UNKNOWN	TOTAL	<1500	1500-2499	2500-3999	>=4000	TOTAL	<2500	>=2500
.3 INFANT DEATHS, SINGLETON INFANTS (CONTINUED)													
W. WHITES													
CATEGORY :													
17-27	4690	94	43	33	206	5066	720.1	114.7	23.1	141.4	529.0	655.4	34.9
17-19	182	4	4	3	25	218	912.8	122.4	16.4	158.5	442.4	800.9	29.9
20-25	3845	40	18	21	132	3256	844.4	110.9	19.2	168.0	648.6	783.5	35.2
26-27	1463	50	21	9	49	1592	533.9	116.9	29.5	101.0	389.6	477.8	36.1
28-31	1656	498	79	9	56	2298	294.1	84.9	16.4	24.5	136.7	188.7	16.9
28-29	1030	141	24	5	28	1228	333.8	108.0	18.4	32.7	208.9	270.2	19.4
30-31	626	357	55	4	28	1070	245.6	78.7	15.6	20.8	97.7	138.8	15.9
32-35	572	1140	583	22	63	2320	266.3	40.2	11.4	10.1	29.4	56.4	11.3
32-33	358	517	100	3	25	1003	259.4	48.2	11.5	4.6	46.5	72.6	11.2
34-35	214	643	483	19	38	1317	278.7	35.2	11.3	11.6	22.8	45.7	11.4
36	71	335	391	27	15	839	257.6	33.1	8.4	12.3	14.0	39.5	8.6
37-39	201	875	3128	209	76	4489	306.6	27.8	4.3	3.7	5.4	34.0	4.2
37	65	311	603	32	21	1032	298.1	30.1	6.5	7.0	9.3	36.2	6.5
38-39	136	564	2525	177	55	3457	311.1	26.7	4.0	3.4	4.8	32.9	3.9
40	64	288	1918	223	34	2527	343.3	34.3	4.0	3.2	4.5	41.3	3.9
41	53	158	1266	180	26	1683	390.2	34.8	3.8	2.6	4.1	46.0	3.6
42-45	63	239	1558	248	40	2148	293.4	45.6	5.2	3.4	5.6	54.7	4.8
42	31	108	772	132	13	1056	322.6	41.8	4.7	3.0	4.9	51.3	4.3
43-45	32	131	786	116	27	1092	269.3	49.3	5.8	4.1	6.4	57.9	5.5
UNKNOWN	2198	784	1715	212	219	5108							
TOTAL	9368	4411	10601	1163	735	26478	473.9	38.5	4.6	3.4	9.3	104.5	4.4
B. BLACKS													
CATEGORY													
17-27	2624	50	37	11	95	2817	673.6	60.1	28.2	129.6	467.0	579.8	32.1
17-19	171	4	4	0	11	190	773.6	66.2	33.3	0.0	477.8	665.8	31.2
20-25	1801	24	20	8	73	1926	769.0	70.4	31.2	192.9	573.3	684.4	38.7
26-27	652	22	13	3	11	701	479.8	49.4	23.8	72.0	302.9	389.7	25.0
28-31	732	172	52	2	23	981	257.9	52.9	15.3	21.6	103.0	149.9	15.5
28-29	458	55	19	1	11	544	299.5	57.2	18.2	28.7	155.5	209.7	18.6
30-31	274	117	33	1	12	437	209.5	51.2	14.0	17.0	72.5	109.2	14.1
32-35	230	408	212	6	18	874	197.1	33.9	10.3	10.0	23.0	48.8	10.3
32-33	145	187	67	2	5	406	202.4	40.5	13.0	13.5	38.5	64.0	13.0
34-35	85	221	145	4	13	468	187.5	29.8	9.4	8.9	18.9	38.5	9.4
36	30	98	121	2	5	256	234.4	24.0	7.9	4.2	12.8	30.8	7.8
37-39	70	293	1047	51	31	1492	244.4	22.5	6.5	7.6	8.1	27.5	6.5
37	25	103	229	8	9	374	216.1	23.7	8.4	10.0	11.2	28.7	8.4
38-39	45	190	818	43	22	1118	261.7	21.8	6.1	7.3	7.4	26.9	6.1
40	31	93	561	35	6	726	359.9	31.7	7.4	5.8	8.6	42.3	7.3
41	16	39	319	22	11	427	221.5	33.7	7.1	4.5	8.1	41.1	6.9

Table 7. Infant Mortality, by Birthweight, Age at Death, Race, and Gestational Age at Birth[1]: Singleton Infants, 1980 Birth Cohort, United States — Continued

	BIRTHWEIGHT (GRAMS)												
	NUMBER OF DEATHS						MORTALITY RISK[2]						
	<1500	1500-2499	2500-3999	>=4000	UNKNOWN	TOTAL	<1500	1500-2499	2500-3999	>=4000	TOTAL	<2500	>=2500
.3 INFANT DEATHS, SINGLETON INFANTS (CONTINUED)													
B. BLACKS (CONTINUED)													
CATEGORY :													
42-45	28	55	443	40	14	580	331.2	26.3	9.1	7.7	10.2	38.7	9.0
42	14	27	202	20	6	269	405.1	28.5	8.5	7.6	9.7	42.0	8.4
43-45	14	28	241	20	8	311	282.3	24.5	9.7	7.8	10.7	36.0	9.5
UNKNOWN	1500	343	711	37	136	2727							
TOTAL	5261	1571	3503	206	339	10880	448.9	30.6	7.5	6.9	19.0	108.8	7.5

NOTE: For definitions and symbols used in this table, see Notes for Tables, preceding Table 1D.1A.

[1]Detailed data include gestational age rounded to nearest integer rather than truncated for one State and some imputed values for another State. Also reporting of infant deaths of gestational age <20 weeks is not required for some States. See Appendix II.

[2]Mortality risk includes 44 States. For exclusion criteria see Appendix III.B.

Table 9. Infant Mortality, by Birthweight, Age at Death, Race, and Month Prenatal Care Began: Singleton Infants, 1980 Birth Cohort, United States

	BIRTHWEIGHT (GRAMS)											
	NUMBER OF DEATHS						MORTALITY RISK[1]					
	<1500	1500-2499	2500-3999	>=4000	UNKNOWN	TOTAL	<1500	1500-2499	2500-3999	>=4000	TOTAL	<2500	>=2500
.1 NEONATAL DEATHS, SINGLETON INFANTS													
A. ALL RACES													
CATEGORY[2]:													
1-3	9076	2680	4189	502	547	16994	433.6	24.7	2.0	1.7	6.8	91.7	3.0
1	1760	419	628	85	90	2982	439.0	23.8	1.9	1.8	7.4	101.2	1.9
2	4536	1389	2154	238	273	8590	436.8	26.5	2.0	1.5	6.6	95.0	2.0
3	2780	872	1407	179	184	5422	425.3	22.7	2.1	2.0	6.7	82.5	2.1
4-6	2336	803	1115	108	168	4530	399.2	22.7	2.2	1.9	7.5	76.0	2.2
4	1245	428	584	61	93	2411	412.7	24.0	2.2	1.9	7.4	79.9	2.1
5	738	232	313	36	52	1371	411.3	21.9	2.1	2.4	7.8	78.0	2.1
6	353	143	218	11	23	748	338.5	20.5	2.5	1.0	7.0	62.4	2.3
7-9	188	185	271	27	26	697	283.8	21.9	2.5	2.6	5.3	40.9	2.5
7	112	104	141	13	13	383	251.4	21.5	2.5	1.9	5.3	40.6	2.4
8	43	57	81	10	10	201	312.2	22.9	2.4	3.3	4.9	38.1	2.5
9	33	24	49	4	3	113	409.7	21.9	3.2	3.5	6.3	49.2	3.2
NONE	1221	152	157	14	77	1621	534.5	27.3	4.8	6.0	37.7	178.0	4.8
UNKNOWN	1206	262	308	32	285	2093							
TOTAL	14027	4082	6040	683	1103	25935	431.6	24.2	2.1	1.8	7.3	89.5	2.1
W. WHITES													
CATEGORY[2]:													
1-3	6130	2170	3346	429	403	12478	444.6	27.7	1.9	1.6	5.9	91.8	1.9
1	1172	334	490	65	65	2126	451.4	27.0	1.8	1.6	6.4	102.1	1.8
2	3223	1173	1734	206	203	6559	445.4	29.5	1.9	1.4	5.9	95.1	1.9
3	1735	663	1102	158	135	3793	438.5	25.2	2.0	2.0	5.7	81.6	2.0
4-6	1344	559	719	76	110	2808	430.0	27.4	2.0	1.5	6.5	90.6	1.9
4	725	298	397	43	64	1527	440.8	27.5	2.0	1.5	6.4	82.3	2.0
5	425	178	193	26	32	856	444.3	30.6	1.9	2.1	7.0	88.0	1.9
6	194	83	127	7	14	425	369.7	21.9	2.1	0.8	5.9	64.1	2.0
7-9	98	113	179	14	15	419	283.1	23.8	2.5	1.6	4.7	40.9	2.4
7	56	63	91	7	7	224	237.4	23.3	2.3	1.4	4.5	40.0	2.2
8	25	37	60	5	6	133	359.0	24.6	2.6	1.8	4.6	39.5	2.5
9	17	13	28	2	2	62	411.4	23.0	2.6	2.1	5.1	48.9	2.6
NONE	386	94	93	9	25	807	535.7	30.9	4.2	4.6	29.9	169.2	4.2
UNKNOWN	719	177	220	23	124	1263							
TOTAL	8877	3113	4557	551	677	17775	444.7	27.5	2.0	1.6	6.2	90.2	1.9
B. BLACKS													
CATEGORY[2]:													
1-3	2698	433	705	61	122	4019	404.3	16.4	2.6	3.0	12.0	91.9	2.6
1	541	77	118	18	20	774	410.0	16.9	2.5	4.3	13.1	102.2	2.6
2	1195	177	329	26	59	1786	409.8	15.8	2.7	3.2	12.2	95.4	2.7
3	962	179	258	17	43	1459	394.4	16.7	2.4	2.2	11.3	83.7	2.4
4-6	983	214	350	26	34	1547	351.3	15.6	2.8	3.9	10.3	67.9	2.8
4	488	117	164	15	27	803	371.4	18.3	2.6	4.5	10.9	73.3	2.7
5	281	48	107	10	18	464	353.3	10.8	2.7	5.1	9.9	62.9	2.9
6	142	49	79	1	9	280	292.1	16.9	3.3	-0.0	9.5	57.1	3.1

Table 9. Infant Mortality, by Birthweight, Age at Death, Race, and Month Prenatal Care Began: Singleton Infants, 1980 Birth Cohort, United States — Continued

	BIRTHWEIGHT (GRAMS)													
	NUMBER OF DEATHS						MORTALITY RISK[1]							
	<1500	1500-2499	2500-3999	>=4000	UNKNOWN	TOTAL	<1500	1500-2499	2500-3999	>=4000	TOTAL	<2500	>=2500
.1 NEONATAL DEATHS, SINGLETON INFANTS (CONTINUED)													
B. BLACKS (CONTINUED)													
CATEGORY[2]:													
7-9	81	57	77	8	6	229	262.9	17.4	2.8	5.0	6.8	38.1	2.9
7	51	33	45	4	3	136	252.0	16.7	2.9	3.0	7.2	38.7	2.9
8	15	16	14	3	2	30	223.4	17.5	1.6	7.6	5.0	31.4	1.9
9	15	8	18	1	1	43	414.0	20.9	5.8	6.9	9.8	51.7	5.1
NONE	599	46	62	3	46	756	532.7	19.3	6.2	8.0	52.0	185.3	6.2
UNKNOWN	429	77	70	7	81	664							
TOTAL	4710	827	1264	105	309	7215	401.8	16.4	2.7	3.4	12.3	87.7	2.8
.2 POSTNEONATAL DEATHS, SINGLETON INFANTS													
A. ALL RACES													
CATEGORY[2]:													
1-3	745	1183	5120	471	46	7565	59.8	10.9	2.4	1.6	3.0	15.9	2.3
1	155	212	764	80	7	1198	57.2	12.1	2.2	1.6	2.9	17.3	2.2
2	371	545	2412	219	21	3568	59.7	10.5	2.2	1.4	2.7	15.6	2.1
3	239	426	1944	172	18	2799	61.5	11.0	2.8	1.9	3.4	15.7	2.7
4-6	283	541	2244	181	11	3260	75.7	14.6	4.3	3.1	5.2	20.2	4.1
4	144	265	1065	99	6	1579	77.2	14.1	3.8	3.1	4.8	19.9	3.8
5	83	165	736	55	3	1042	70.3	15.2	4.6	3.4	5.6	20.2	4.5
6	56	111	443	27	2	639	80.5	15.0	4.9	2.6	5.9	21.1	4.7
7-9	37	145	668	46	4	900	81.4	17.4	6.2	4.8	7.1	20.9	6.1
7	26	88	347	26	2	489	84.2	18.9	5.9	4.7	7.1	23.2	5.8
8	6	44	207	14	1	272	66.1	16.9	6.1	4.8	6.8	18.8	6.0
9	5	13	114	6	1	139	95.3	11.8	7.8	5.0	8.0	15.5	7.5
NONE	106	121	243	13	8	491	89.2	21.6	7.4	5.7	11.5	33.0	7.3
UNKNOWN	104	135	394	30	73	736							
TOTAL	1275	2125	8669	741	142	12952	65.6	12.5	3.0	2.0	3.7	17.8	2.9
W. WHITES													
CATEGORY[2]:													
1-3	449	798	3841	405	32	5525	55.6	10.1	2.2	1.5	2.6	14.4	2.1
1	81	136	559	68	7	851	55.9	10.9	2.0	1.5	2.5	15.8	1.9
2	227	397	1877	197	13	2711	53.7	10.1	2.0	1.4	2.4	14.3	1.9
3	141	265	1405	140	12	1963	58.9	9.8	2.5	1.7	2.9	13.9	2.4
4-6	136	296	1458	145	8	2043	71.6	13.7	3.8	2.9	4.5	18.4	3.7
4	69	155	705	83	5	1017	72.5	13.6	3.4	3.0	4.1	18.3	3.4
5	37	80	470	42	2	631	60.1	13.2	4.3	3.2	4.8	17.2	4.1
6	30	61	283	20	1	395	87.7	14.8	4.6	2.3	5.3	20.7	4.3
7-9	20	81	406	32	0	539	81.9	17.4	5.4	4.0	6.1	20.6	5.3
7	13	47	289	20	0	391	90.1	17.7	5.1	4.3	6.1	22.1	5.1
8	3	26	127	8	0	164	72.2	18.6	5.4	3.4	6.1	20.2	5.2
9	2	8	70	4	0	84	43.7	13.1	6.5	4.0	6.7	14.4	6.3
NONE	43	56	128	8	3	230	78.4	19.1	5.8	4.5	8.7	28.2	5.6
UNKNOWN	43	67	219	22	15	366							
TOTAL	691	1298	6044	612	58	8703	60.2	11.4	2.6	1.8	3.1	15.9	2.5

Table 9. Infant Mortality, by Birthweight, Age at Death, Race, and Month Prenatal Care Began: Singleton Infants, 1980 Birth Cohort, United States — Continued

	BIRTHWEIGHT (GRAMS)												
	NUMBER OF DEATHS						MORTALITY RISK[1]						
	<1500	1500-2499	2500-3999	>=4000	UNKNOWN	TOTAL	<1500	1500-2499	2500-3999	>=4000	TOTAL	<2500	>=2500
.2 POSTNEONATAL DEATHS, SINGLETON INFANTS (CONTINUED)													
B. BLACKS													
CATEGORY[2]:													
1-3	281	343	1030	48	11	1733	68.4	12.8	3.9	2.4	5.3	19.9	3.8
1	53	71	166	10	0	300	62.2	15.7	3.4	2.9	5.2	22.3	3.3
2	134	128	444	14	6	726	72.8	11.3	3.8	1.5	5.1	19.4	3.6
3	94	144	440	24	5	707	66.6	13.2	4.2	3.2	5.7	19.5	4.1
4-6	138	221	698	33	2	1092	78.1	15.7	5.5	4.7	7.3	22.4	5.5
4	71	99	325	14	0	509	81.3	14.7	5.3	4.0	7.0	22.0	5.2
5	43	76	229	13	1	362	76.9	17.1	5.5	6.0	7.5	23.4	5.6
6	24	46	144	6	1	221	72.3	15.7	6.1	4.6	7.8	21.9	6.1
7-9	15	58	221	8	2	304	74.6	18.0	8.3	6.8	9.7	21.7	8.2
7	9	37	122	2	1	171	67.3	20.9	8.2	3.1	9.8	24.3	7.9
8	3	17	64	4	1	89	60.3	14.8	7.6	10.5	8.7	17.3	7.7
9	3	4	35	2	0	44	170.7	11.5	10.3	13.9	11.3	19.2	10.5
NONE	61	58	109	5	4	237	101.4	23.3	10.5	12.7	16.6	37.8	10.6
UNKNOWN	56	64	161	7	11	299							
TOTAL	531	744	2239	101	30	3665	74.1	14.6	4.8	3.3	6.5	21.8	4.7
.3 INFANT DEATHS, SINGLETON INFANTS													
A. ALL RACES													
CATEGORY[2]:													
1-3	9821	3863	9309	973	593	24559	467.5	35.3	4.5	3.3	9.7	106.1	4.3
1	1895	631	1392	165	97	4180	471.1	35.6	4.1	3.4	10.3	116.8	4.0
2	4907	1934	4566	437	294	12138	470.4	36.7	4.2	2.9	9.4	109.1	4.1
3	3019	1298	3351	351	202	8221	460.6	33.4	4.9	3.9	10.0	96.8	4.8
4-6	2619	1344	3359	289	179	7790	444.7	37.0	6.4	5.0	12.6	94.7	6.3
4	1389	693	1649	160	99	3990	458.0	37.8	6.0	5.0	12.1	98.2	5.9
5	821	397	1049	91	55	2413	452.7	36.8	6.7	5.8	13.4	96.6	6.7
6	409	254	661	38	25	1387	391.8	35.2	7.4	3.7	12.9	82.2	7.0
7-9	225	330	939	73	30	1597	342.1	39.0	8.7	7.3	12.4	60.9	8.6
7	138	192	488	39	15	872	314.4	40.0	8.3	6.7	12.3	62.8	8.2
8	49	101	288	24	11	473	357.6	39.4	8.5	8.1	11.7	56.2	8.4
9	38	37	163	10	4	252	466.0	33.5	10.9	8.5	14.2	63.9	10.7
NONE	1527	273	400	27	85	2112	576.1	48.3	12.2	11.7	48.7	205.1	12.1
UNKNOWN	1310	397	702	62	358	2829							
TOTAL	15302	6207	14709	1424	1245	38887	468.9	36.4	5.1	3.7	10.9	105.7	4.9
W. WHITES													
CATEGORY[2]:													
1-3	6579	2968	7187	834	435	18003	473.5	37.5	4.1	3.1	8.5	104.9	4.0
1	1253	470	1049	133	72	2977	482.0	37.6	3.8	3.0	8.9	116.3	3.7
2	3450	1570	3631	483	216	9270	475.2	39.3	3.9	2.8	8.3	108.0	3.8
3	1876	928	2507	298	147	5756	471.6	34.8	4.6	3.8	8.6	94.4	4.5
4-6	1480	855	2177	221	118	4851	470.8	40.7	5.8	4.5	11.0	97.6	5.7
4	794	453	1102	136	69	2544	481.3	40.7	5.4	4.5	10.4	99.1	5.3
5	462	258	665	68	34	1487	477.7	43.4	6.1	5.2	11.8	103.7	6.0
6	224	144	410	27	15	820	425.0	36.3	6.7	3.1	11.2	83.5	6.3

Table 9. Infant Mortality, by Birthweight, Age at Death, Race, and Month Prenatal Care Began: Singleton Infants, 1980 Birth Cohort, United States — Continued

	BIRTHWEIGHT (GRAMS)												
	NUMBER OF DEATHS						MORTALITY RISK[1]						
	<1500	1500-2499	2500-3999	>=4000	UNKNOWN	TOTAL	<1500	1500-2499	2500-3999	>=4000	TOTAL	<2500	>=2500
.3 INFANT DEATHS, SINGLETON INFANTS (CONTINUED)													
W. WHITES (CONTINUED)													
CATEGORY[2]:													
7-9	118	194	583	46	15	958	343.6	40.8	7.9	5.6	10.8	60.7	7.6
7	71	110	300	27	7	515	306.1	40.8	7.5	5.8	10.6	61.2	7.3
8	28	63	187	13	6	297	405.2	42.8	8.0	5.2	10.7	58.9	7.7
9	19	21	98	6	2	146	437.1	35.8	9.1	6.1	11.7	62.6	8.8
NONE	629	150	213	17	28	1037	572.1	49.4	9.9	9.1	38.3	192.6	9.9
UNKNOWN	762	244	439	45	139	1629							
TOTAL	9568	4411	10601	1163	735	26478	478.2	38.6	4.6	3.4	9.3	104.6	4.4
B. BLACKS													
CATEGORY[2]:													
1-3	2979	776	1755	109	133	5752	445.0	29.0	6.4	5.4	17.3	110.0	6.3
1	594	148	284	28	20	1074	446.7	32.3	5.9	7.3	18.2	122.2	5.9
2	1329	305	773	40	65	2512	452.8	26.9	6.4	4.7	17.2	112.9	6.3
3	1056	323	698	41	48	2166	434.7	29.7	6.6	5.4	17.0	101.5	6.5
4-6	1041	435	1048	59	56	2639	401.9	31.1	8.3	8.6	17.6	88.8	8.3
4	551	216	489	29	27	1312	422.6	32.7	7.9	8.5	17.8	95.9	8.0
5	324	124	336	23	19	826	403.0	27.7	8.3	11.0	17.3	84.8	8.4
6	166	95	223	7	10	501	343.2	32.3	9.4	4.6	17.2	77.7	9.2
7-9	96	115	298	16	8	533	317.9	35.1	11.0	11.7	16.4	58.9	11.1
7	60	70	167	6	4	307	302.4	37.3	11.1	6.0	16.9	62.0	10.8
8	18	33	78	7	3	139	270.3	32.1	9.1	18.0	13.6	48.2	9.6
9	18	12	53	3	1	87	514.0	32.1	15.3	20.7	21.0	69.9	15.3
NONE	660	104	171	8	50	993	580.1	42.2	16.6	20.5	67.7	216.0	16.8
UNKNOWN	485	141	231	14	92	963							
TOTAL	5261	1571	3503	206	339	10880	446.1	30.7	7.5	6.7	18.7	107.5	7.4

NOTE: For definitions and symbols used in this table, see Notes for Tables, preceding Table 1D.1A.

[1]Mortality risk includes 43 States. For exclusion criteria see Appendix III.B.

[2]Some '0' values for mortality data were classified as 'unknown' rather than 'none' for one State. See Appendix II.

Table 11. Infant Mortality, by Birthweight, Age at Death, Race, and Grouped by Cause of Death: Singleton Infants, 1980 Birth Cohort, United States

	BIRTHWEIGHT (GRAMS)												
	NUMBER OF DEATHS						MORTALITY RISK						
	<1500	1500-2499	2500-3999	>=4000	UNKNOWN	TOTAL	<1500	1500-2499	2500-3999	>=4000	TOTAL	<2500	>=2500
.1 NEONATAL DEATHS, SINGLETON INFANTS													
A. ALL RACES													
CAUSE GROUP:													
PREMATURITY/LBW	4923	75	41	33	187	5259	150.7	0.5	0.0	0.1	1.5	24.5	0.0
RES DISTRESS SYN	2897	610	206	17	120	3850	88.4	3.6	0.1	0.0	1.1	17.2	0.1
OTHER PERI RESP	1222	235	512	70	85	2125	37.6	1.4	0.2	0.2	0.6	7.2	0.2
BTH TRAUMA/HYPOX	967	273	628	113	109	2090	30.2	1.6	0.2	0.3	0.6	6.2	0.2
OTHER PERINATAL	2612	423	508	78	246	3867	82.5	2.5	0.2	0.2	1.1	15.4	0.2
INFECTION	298	349	507	45	22	1221	9.0	2.0	0.2	0.1	0.3	3.1	0.2
CON ANOMALIES	874	1902	2949	263	285	6273	27.1	11.2	1.0	0.7	1.8	13.8	1.0
EXTERNAL	12	15	67	5	8	107	0.4	0.1	0.0	0.0	0.0	0.1	0.0
SIDS	3	67	318	21	4	413	0.1	0.4	0.1	0.1	0.1	0.3	0.1
CIR ARREST & NS	33	22	49	7	5	116	1.0	0.1	0.0	0.0	0.0	0.3	0.0
ALL OTHER	186	110	255	31	32	614	5.8	0.7	0.1	0.1	0.2	1.5	0.1
TOTAL[1]	14027	4082	6040	683	1103	25935	432.7	24.1	2.1	1.9	7.3	89.6	2.1
W. WHITES													
CAUSE GROUP:													
PREMATURITY/LBW	2885	47	19	23	108	3082	143.5	0.4	0.0	0.1	1.1	21.8	0.0
RES DISTRESS SYN	1993	493	151	12	69	2718	98.3	4.3	0.1	0.0	1.0	18.3	0.1
OTHER PERI RESP	731	174	338	51	47	1361	37.4	1.5	0.1	0.2	0.5	6.9	0.1
BTH TRAUMA/HYPOX	640	193	474	91	67	1465	32.2	1.7	0.2	0.3	0.5	6.3	0.2
OTHER PERINATAL	1635	297	350	66	134	2482	83.0	2.7	0.2	0.2	0.9	14.7	0.2
INFECTION	171	238	372	34	11	826	8.3	2.0	0.2	0.1	0.3	3.0	0.2
CON ANOMALIES	667	1530	2386	221	207	5011	33.4	13.5	1.1	0.7	1.8	16.5	1.0
EXTERNAL	9	7	43	5	5	69	0.5	0.1	0.0	0.0	0.0	0.1	0.0
SIDS	3	33	205	16	3	262	0.1	0.3	0.1	0.0	0.1	0.3	0.1
CIR ARREST & NS	18	14	33	4	5	74	0.9	0.1	0.0	0.0	0.0	0.2	0.0
ALL OTHER	105	85	186	28	21	425	5.3	0.8	0.1	0.1	0.1	1.4	0.1
TOTAL[1]	8877	3113	4537	551	677	17775	443.0	27.4	2.0	1.7	6.2	89.6	2.0
B. BLACKS													
CAUSE GROUP:													
PREMATURITY/LBW	1905	25	21	8	60	2019	162.6	0.5	0.0	0.3	3.5	30.6	0.1
RES DISTRESS SYN	810	102	49	5	37	1003	69.7	2.0	0.1	0.2	1.7	14.6	0.1
OTHER PERI RESP	437	54	149	15	24	679	37.6	1.1	0.3	0.5	1.2	7.8	0.3
BTH TRAUMA/HYPOX	287	72	135	18	31	543	25.2	1.4	0.3	0.6	0.9	5.9	0.3
OTHER PERINATAL	900	114	135	12	85	1246	80.1	2.3	0.3	0.4	2.2	16.8	0.3
INFECTION	118	98	125	8	8	357	10.0	1.9	0.3	0.3	0.6	3.4	0.3
CON ANOMALIES	161	302	447	31	54	995	14.1	6.0	1.0	1.1	1.7	7.5	1.0
EXTERNAL	3	6	22	0	2	33	0.3	0.1	0.0	0.0	0.1	0.1	0.0
SIDS	0	29	104	2	0	135	0.0	0.5	0.2	0.1	0.2	0.4	0.2
CIR ARREST & NS	14	8	14	3	0	37	1.2	0.1	0.0	0.1	0.1	0.3	0.0
ALL OTHER	75	19	63	3	8	168	6.5	0.4	0.1	0.1	0.3	1.5	0.1
TOTAL[1]	4710	827	1264	105	309	7215	407.4	16.4	2.8	3.7	12.5	89.1	2.8
.2 POSTNEONATAL DEATHS, SINGLETON INFANTS													
A. ALL RACES													
CAUSE GROUP:													
PREMATURITY/LBW	25	3	4	0	0	32	1.3	0.0	0.0	0.0	0.0	0.1	0.0
RES DISTRESS SYN	286	64	30	3	11	383	15.3	0.4	0.0	0.0	0.1	1.9	0.0
OTHER PERI RESP	23	16	29	3	3	74	1.3	0.1	0.0	0.0	0.0	0.2	0.0
BTH TRAUMA/HYPOX	18	15	43	3	3	80	0.9	0.1	0.0	0.0	0.0	0.2	0.0
OTHER PERINATAL	70	25	52	4	6	157	3.8	0.2	0.0	0.0	0.0	0.5	0.0
INFECTION	199	294	1144	94	14	1745	10.4	1.7	0.4	0.2	0.5	2.8	0.4

Table 11. Infant Mortality, by Birthweight, Age at Death, Race, and Grouped by Cause of Death: Singleton Infants, 1980 Birth Cohort, United States — Continued

	BIRTHWEIGHT (GRAMS)												
	NUMBER OF DEATHS						MORTALITY RISK						
	<1500	1500-2499	2500-3999	>=4000	UNKNOWN	TOTAL	<1500	1500-2499	2500-3999	>=4000	TOTAL	<2500	>=2500
.2 POSTNEONATAL DEATHS, SINGLETON INFANTS (CONTINUED)													
A. ALL RACES (CONTINUED)													
CAUSE GROUP:													
CON ANOMALIES	178	554	1484	153	32	2401	9.4	3.2	0.5	0.4	0.7	3.9	0.5
EXTERNAL	27	128	872	76	9	1112	1.4	0.7	0.3	0.2	0.3	0.8	0.3
SIDS	143	681	3529	259	38	4650	7.5	4.0	1.2	0.7	1.3	4.3	1.1
CIR ARREST & NS	43	79	291	31	5	449	2.3	0.5	0.1	0.1	0.1	0.6	0.1
ALL OTHER	265	266	1201	116	19	1867	13.9	1.6	0.4	0.3	0.5	2.8	0.4
TOTAL[1]	1275	2125	8669	741	142	12952	67.4	12.4	3.0	1.9	3.7	17.9	2.9
W. WHITES													
CAUSE GROUP:													
PREMATURITY/LBW	12	2	2	0	0	16	1.0	0.0	0.0	0.0	0.0	0.1	0.0
RES DISTRESS SYN	174	50	18	2	7	251	15.4	0.4	0.0	0.0	0.1	1.8	0.0
OTHER PERI RESP	11	11	21	2	1	46	1.0	0.1	0.0	0.0	0.0	0.2	0.0
BTH TRAUMA/HYPOX	10	9	31	2	1	53	0.9	0.1	0.0	0.0	0.0	0.2	0.0
OTHER PERINATAL	33	19	35	4	5	96	3.0	0.2	0.0	0.0	0.0	0.4	0.0
INFECTION	97	157	728	69	2	1053	8.4	1.4	0.3	0.2	0.4	2.0	0.3
CON ANOMALIES	96	396	1186	134	21	1833	8.4	3.5	0.5	0.4	0.6	3.9	0.5
EXTERNAL	11	66	610	63	2	752	0.9	0.6	0.3	0.2	0.3	0.6	0.2
SIDS	81	374	2403	214	10	3082	7.0	3.3	1.0	0.6	1.1	3.6	1.0
CIR ARREST & NS	23	38	175	23	1	260	2.0	0.3	0.1	0.1	0.1	0.5	0.1
ALL OTHER	143	176	835	99	8	1261	12.4	1.5	0.4	0.3	0.4	2.5	0.3
TOTAL[1]	691	1298	6044	612	58	8703	60.3	11.4	2.6	1.8	3.1	15.9	2.5
B. BLACKS													
CAUSE GROUP:													
PREMATURITY/LBW	11	1	2	0	0	14	1.5	0.0	0.0	0.0	0.0	0.2	0.0
RES DISTRESS SYN	101	12	2	0	3	118	14.5	0.2	0.0	0.0	0.2	2.0	0.0
OTHER PERI RESP	12	5	7	1	3	28	1.9	0.1	0.0	0.0	0.0	0.3	0.0
BTH TRAUMA/HYPOX	3	6	11	0	2	24	0.8	0.1	0.0	0.0	0.0	0.2	0.0
OTHER PERINATAL	33	6	16	0	1	58	5.0	0.1	0.0	0.0	0.1	0.7	0.0
INFECTION	99	128	352	21	5	605	13.9	2.5	0.7	0.7	1.1	3.9	0.7
CON ANOMALIES	76	131	229	15	1	452	10.6	2.5	0.5	0.3	0.8	3.5	0.5
EXTERNAL	15	55	229	12	2	313	2.1	1.1	0.5	0.4	0.6	1.2	0.5
SIDS	62	286	972	32	5	1357	8.7	5.5	2.0	1.1	2.4	5.9	2.0
CIR ARREST & NS	19	36	95	8	2	160	2.7	0.7	0.2	0.3	0.3	0.9	0.2
ALL OTHER	116	78	324	12	6	536	16.4	1.5	0.7	0.4	0.9	3.3	0.7
TOTAL[1]	551	744	2239	101	30	3665	78.1	14.4	4.7	3.4	6.5	22.1	4.6
.3 INFANT DEATHS, SINGLETON INFANTS													
A. ALL RACES													
CAUSE GROUP:													
PREMATURITY/LBW	4948	78	45	33	187	5291	151.5	0.5	0.0	0.1	1.5	24.7	0.0
RES DISTRESS SYN	3183	674	226	19	131	4233	97.1	3.9	0.1	0.1	1.2	18.9	0.1
OTHER PERI RESP	1245	252	541	73	90	2201	38.4	1.5	0.2	0.2	0.6	7.4	0.2
BTH TRAUMA/HYPOX	983	288	671	116	112	2170	30.7	1.7	0.2	0.3	0.6	6.4	0.2
OTHER PERINATAL	2682	448	560	82	252	4024	84.6	2.7	0.2	0.2	1.1	15.8	0.2
INFECTION	497	643	1651	139	36	2966	14.9	3.7	0.6	0.4	0.8	5.5	0.5
CON ANOMALIES	1052	2456	4433	416	317	8674	32.4	14.4	1.6	1.1	2.4	17.3	1.5
EXTERNAL	39	143	939	81	17	1219	1.2	0.8	0.3	0.2	0.3	0.9	0.3
SIDS	146	748	3847	280	42	5063	4.4	4.3	1.3	0.7	1.4	4.3	1.2
CIR ARREST & NS	76	101	340	38	10	565	2.3	0.6	0.1	0.1	0.2	0.9	0.1
ALL OTHER	451	376	1456	147	51	2481	13.7	2.2	0.5	0.4	0.7	4.0	0.5
TOTAL[1]	15302	6287	14709	1424	1245	38887	471.1	36.2	5.1	3.8	11.0	105.9	5.0

Table 11. Infant Mortality, by Birthweight, Age at Death, Race, and Grouped by Cause of Death: Singleton Infants, 1980 Birth Cohort, United States — Continued

TABLE 11. INFANT MORTALITY BY BIRTHWEIGHT, AGE AT DEATH, RACE AND GROUPED BY CAUSE OF DEATH
SINGLETON INFANTS, 1980 BIRTH COHORT, UNITED STATES (CONTINUED)

	BIRTHWEIGHT (GRAMS)												
	NUMBER OF DEATHS						MORTALITY RISK						
	<1500	1500-2499	2500-3999	>=4000	UNKNOWN	TOTAL	<1500	1500-2499	2500-3999	>=4000	TOTAL	<2500	>=2500
.3 INFANT DEATHS, SINGLETON INFANTS (CONTINUED)													
W. WHITES													
CAUSE GROUP:													
PREMATURITY/LBW	2897	49	21	23	108	3098	144.1	0.4	0.0	0.1	1.1	21.9	0.0
RES DISTRESS SYN	2167	543	169	14	76	2969	106.9	4.7	0.1	0.0	1.0	20.0	0.1
OTHER PERI RESP	762	185	359	53	48	1407	37.9	1.6	0.2	0.2	0.5	7.1	0.2
BTH TRAUMA/HYPOX	650	202	505	93	68	1518	32.7	1.8	0.2	0.3	0.5	6.4	0.2
OTHER PERINATAL	1668	316	385	70	139	2578	84.7	2.8	0.2	0.2	0.9	15.1	0.2
INFECTION	268	395	1100	103	13	1879	13.0	3.4	0.5	0.3	0.7	4.8	0.4
CON ANOMALIES	763	1926	3572	355	228	6844	38.1	16.9	1.6	1.1	2.4	20.1	1.5
EXTERNAL	20	73	653	68	7	821	1.0	0.6	0.3	0.2	0.3	0.7	0.3
SIDS	84	409	2608	230	13	3344	4.1	3.5	1.1	0.7	1.2	3.6	1.1
CIR ARREST & NS	41	52	208	27	6	334	2.0	0.4	0.1	0.1	0.1	0.7	0.1
ALL OTHER	248	261	1021	127	29	1686	12.2	2.3	0.4	0.4	0.6	3.7	0.4
TOTAL[1]	9568	4411	10601	1163	735	26478	476.6	38.4	4.6	3.4	9.3	104.0	4.4
B. BLACKS													
CAUSE GROUP:													
PREMATURITY/LBW	1916	26	23	8	60	2033	163.5	0.5	0.1	0.3	3.5	30.8	0.1
RES DISTRESS SYN	911	114	51	5	40	1121	78.3	2.2	0.1	0.2	1.9	16.4	0.1
OTHER PERI RESP	449	59	156	16	27	707	38.7	1.2	0.3	0.6	1.2	8.1	0.4
BTH TRAUMA/HYPOX	292	78	146	18	33	567	25.7	1.6	0.3	0.6	1.0	6.1	0.3
OTHER PERINATAL	935	120	151	12	86	1304	83.0	2.4	0.3	0.4	2.3	17.4	0.3
INFECTION	217	226	477	29	13	962	18.3	4.3	1.0	1.0	1.7	6.9	1.0
CON ANOMALIES	237	433	676	46	55	1447	20.4	8.5	1.5	1.6	2.5	10.7	1.5
EXTERNAL	18	61	251	12	4	346	1.5	1.2	0.5	0.4	0.6	1.2	0.5
SIDS	62	315	1076	34	5	1492	5.2	6.0	2.2	1.1	2.6	5.8	2.2
CIR ARREST & NS	33	42	109	11	2	197	2.8	0.8	0.2	0.4	0.3	1.2	0.2
ALL OTHER	191	97	387	15	14	704	16.3	1.9	0.8	0.5	1.2	4.5	0.8
TOTAL[1]	5261	1571	3503	206	339	10880	453.7	30.6	7.4	7.1	18.9	109.2	7.4

NOTE: For definitions and symbols used in this table, see Notes for Tables, preceding Table 1D.1A.

[1]Total mortality risks may differ slightly from those shown in table 1B. due to category-specific distribution of unknown birthweights for each table. See Appendix III.A.

Set B: Tables 12-14. Multiple Birth Infants

Table 12. Infant Mortality, by Birthweight and Race: Multiple Birth Infants, 1980 Birth Cohort, United States

BIRTHWEIGHT (GRAMS)

	NUMBER OF DEATHS						MORTALITY RISK[1]						
	<1500	1500-2499	2500-3999	>=4000	UNKNOWN	TOTAL	<1500	1500-2499	2500-3999	>=4000	TOTAL	<2500	>=2500
.4 INFANT DEATHS, MULTIPLE BIRTH INFANTS A. ALL RACES													
CATEGORY :													
WHITE	2261	485	182	13	136	2997	469.2	20.0	7.1	70.0	55.8	103.6	7.6
BLACK	951	151	59	5	41	1207	422.9	24.3	11.4	123.2	84.7	129.6	12.3
ALL	3312	571	246	18	183	4330	456.7	20.9	7.7	78.1	61.9	111.8	8.3

NOTE: For definitions and symbols used in this table, see Notes for Tables, preceding Table 1D.1A.

[1]Mortality risks may differ slightly from those shown in table 1E.4 due to category-specific distribution of unknown birthweights for each table. See Appendix III.A.

Table 13. Infant Mortality by Birthweight and Plurality: Multiple Birth Infants, 1980 Birth Cohort, United States

BIRTHWEIGHT (GRAMS)

	NUMBER OF DEATHS						MORTALITY RISK						
	<1500	1500-2499	2500-3999	>=4000	UNKNOWN	TOTAL	<1500	1500-2499	2500-3999	>=4000	TOTAL	<2500	>=2500
.4 INFANT DEATHS, MULTIPLE BIRTH INFANTS A. ALL RACES													
CATEGORY :													
TWIN BIRTH	3104	564	246	17	173	4104	457.1	21.0	7.6	70.6	59.6	108.7	8.1
OTHER MULT	208	7	0	1	10	226	433.4	11.3	0.0	345.9	166.9	192.6	5.8
TOTAL	3312	571	246	18	183	4330	455.6	20.8	7.6	74.1	61.7	111.4	8.1

NOTE: For definitions and symbols used in this table, see Notes for Tables, preceding Table 1D.1A.

Mortality risk includes 50 States. For exclusion criteria see Appendix III.B.

Table 14. Infant Mortality, by Birthweight and Gestational Age at Birth[1]: Multiple Birth Infants, 1980 Birth Cohort, United States

	BIRTHWEIGHT (GRAMS)													
	NUMBER OF DEATHS						MORTALITY RISK[2]							
	<1500	1500-2499	2500-3999	>=4000	UNKNOWN	TOTAL	<1500	1500-2499	2500-3999	>=4000	TOTAL	<2500	>=2500
.4 INFANT DEATHS, MULTIPLE BIRTH INFANTS													
A. ALL RACES													
CATEGORY :													
17-27	1767	13	7	9	88	1884	740.3	61.0	143.2	*	688.9	697.7	262.3
17-19	76	1	1	0	9	87	883.0	236.8	501.7	.	859.5	864.1	501.7
20-23	1149	9	4	8	59	1229	846.5	92.6	140.4	*	807.8	817.4	347.1
24	298	1	1	1	12	313	640.3	33.6	92.1	.	576.8	591.3	92.1
27	244	2	1	0	8	255	484.9	40.7	177.5	.	428.6	432.0	177.5
28-31	595	66	3	1	26	691	271.8	53.5	9.9	0.0	191.3	187.9	9.8
28	233	9	1	1	8	252	377.0	91.0	86.0	.	331.5	336.7	86.0
29	136	10	1	0	8	155	244.3	38.0	0.0	0.0	186.2	191.4	0.0
30	139	26	1	0	5	171	233.8	74.5	0.0	.	165.7	172.9	0.0
31	87	21	0	0	5	113	285.7	40.7	0.0	.	98.1	103.1	0.0
32-35	164	168	21	0	11	364	166.2	19.0	13.0	0.0	29.1	32.4	13.0
32	61	42	1	0	2	106	193.9	30.5	0.0	.	57.9	60.0	0.0
33	42	36	7	0	2	87	170.1	16.3	39.1	0.0	35.0	34.6	38.8
34	35	31	7	0	4	97	171.7	20.8	18.7	0.0	29.4	31.3	18.6
35	26	39	6	0	3	74	102.4	12.9	6.9	0.0	14.6	17.6	6.9
36	27	34	21	2	2	106	254.0	14.8	8.8	0.0	17.4	23.7	8.8
37-39	37	110	84	1	8	240	206.1	14.8	5.8	18.1	10.7	20.3	5.9
37	8	39	27	0	1	75	81.5	13.4	6.5	0.0	10.5	13.6	6.5
38	21	34	28	1	3	87	376.6	14.3	3.9	47.4	11.9	24.5	6.1
39	8	37	29	0	4	78	238.3	17.7	5.3	0.0	9.6	22.4	5.3
40	11	71	20	2	0	55	99.4	17.8	3.0	66.0	7.5	20.5	3.6
41	4	16	24	1	1	46	182.8	21.5	10.9	0.0	15.1	28.7	10.7
42-43	8	23	20	0	1	32	184.3	22.7	12.7	0.0	18.7	32.2	12.6
42	4	10	9	0	1	24	247.3	25.5	10.8	0.0	17.8	36.4	10.6
43-45	4	13	11	0	0	28	145.9	20.3	14.9	0.0	19.5	28.8	14.7
UNKNOWN	699	99	46	2	46	892							
TOTAL	3312	571	246	18	183	4330	449.8	19.7	7.3	38.3	61.0	110.7	7.6

NOTE: For definitions and symbols used in this table, see Notes for Tables, preceding Table 1D.1A.

[1]Detailed data include gestational age rounded to nearest integer rather than truncated for one State and some imputed values for another State. Also reporting of infant deaths of gestational age <20 weeks is not required for some States. See Appendix I7.

[2]Mortality risk includes 33 States. For exclusion criteria see Appendix III.B.

☆U.S. Government Printing Office: 1990-731-103/02049 Region IV

DEPARTMENT OF
HEALTH & HUMAN SERVICES
Public Health Service
Centers for Disease Control
Atlanta, GA 30333

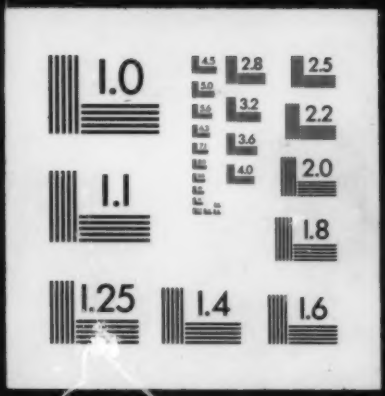
Official Business
Penalty for Private Use $300

FIRST-CLASS MAIL
POSTAGE & FEES PAID
PHS/CDC
Permit No. G-284

A 48106SER 06 8639 9 X
SERIALS ACQUISITION DEPT
UNIVERSITY MICROFILMS
300 NORTH ZEEB ROAD
ANN ARBOR, MI 48106

HHS Publication No. (CDC) 89-8017

Redistribution using permit imprint is illegal.


1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0